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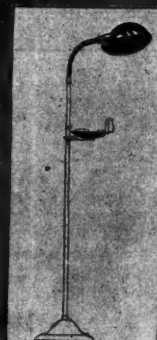
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Table of Contents

	PAGE.		PAGE.
ORIGINAL ARTICLES—		ABSTRACTS FROM CURRENT MEDICAL LITERATURE—	
Listerian Oration, by Fred. D. Bird, C.B., M.S., M.B., F.R.C.S.	527	Pathology	546
The Clinical Manifestations of Reserve of the Heart Muscle: A Preliminary Report, by Norman W. Markwell, M.B., Ch.M.	534	Pædiatrics	547
Convention and Decapsulation in Acute Nephritis, by J. Forbes Mackenzie, M.B.	535	BRITISH MEDICAL ASSOCIATION NEWS—	
The Treatment of Urethritis: General Principles and Results, by Robert J. Silverton, M.B., Ch.M., F.R.C.S.	536	Medico-Political	548
REPORTS OF CASES—		Formation of a Special Section	548
Rupture of the Bowel by Compressed Air, by W. Allan Hailes, D.S.O., M.B., Ch.B., F.R.C.S.	538	Nominations and Elections	548
Extremes Ascites, by I. C. Hains, M.B., B.S.	539	The War Memorial Fund in Victoria	548
REVIEWS—		Notice to Members	548
Cardiology	539	Farewell to Dr. N. Hamilton Fairley	548
Anxiety Hysteria	540	MEDICAL SOCIETIES—	
POST-GRADUATE COURSE IN SYDNEY		Brisbane General Hospital Clinical Society	549
CENTENARY OF THE PHILOSOPHICAL SOCIETY OF AUSTRALASIA		PUBLIC HEALTH—	
THE ALVARENGA PRIZE		The International Health Board	550
LEADING ARTICLES—		The Plague Outbreak	552
A Lesson in Medico-Politics	541	NAVAL AND MILITARY	
The Tuberculosis Question	542	THE AUSTRALASIAN MEDICAL CONGRESS, BRISBANE, 1920	
THE WEEK—		CORRESPONDENCE—	
Red Blood Cells in Disease	543	The Death of Princess Charlotte of Wales	553
Pneumatic Rupture of the Bowel	544	The Cost of Medicines	553
Children's Fears	545	MEDICAL MATTERS IN PARLIAMENT—	
		The Hospitals Bill in Western Australia	553
		BIRTHS, MARRIAGES AND DEATHS.	553
		BOOKS RECEIVED	554
		MEDICAL APPOINTMENTS	554
		MEDICAL APPOINTMENTS VACANT, ETC.	554
		MEDICAL APPOINTMENTS: IMPORTANT NOTICE	554
		DIARY FOR THE MONTH	554
		EDITORIAL NOTICES	554

LISTERIAN ORATION.¹

By Fred. D. Bird, C.B., M.S., M.B., F.R.C.S. (Honorary),
Melbourne.

It is a great honour to be asked to address the profession in another capital city, especially is it so when that city is Adelaide, because, although you may not know it, Australasian surgeons have long considered Adelaide to be the home of particularly sound surgery.

Your courtesy has even extended to me the choice of a subject. In selecting one, I felt I must avoid anything that savoured much of books, or even journals. I conceived that a recital of experiences from a surgical career of thirty-five years would be less uninteresting to you than a set lecture. Your orator (save the mark!) will therefore try to give you what he has learnt or thinks he has learnt of the disabilities of the knee-joint from cases he has seen.

In the first place, I share with you the greatest respect for the knee-joint, æsthetically, surgically and pathologically.

Does not Boerhaave say: "*In mirabile articulatione femoris adoravimus creatorem?*" He would

have attained even greater ecstasy had he contemplated the knee-joint. An articulation, which one moment can be a hinge and in the twinkling of an eye part of a solid column bearing the whole weight of the body, which rejoices in a fulcrum Archimedes never asked for, a fulcrum constantly shifting, when the joint is active, in a manner which is the despair of mathematicians and which with any amount of hard usage carries humanity through life without appreciable wear and tear. This is most wonderful, when all is attained without a favouring conformation of the bones, such as exists in the analogy of the upper extremity. The soft tissues have to answer entirely for the integrity of the solid column and for the mobility of the hinge. It is supremely wonderful to find a pronation movement in the flexed position, existing with the other movements and with the immobility of the column.

It can but be then that disabilities of movement will concern the surgeon much. These disabilities, I take it, may be divided into those of congenital origin, those acquired gradually, those acquired by sudden violence and those which are purely pathological. Superimposed upon all these adhesions between various parts of the joint may come into being. It has always surprised me that surgeons, remembering that soft tissues, with some steadying

¹ Delivered before the South Australian Branch of the British Medical Association on May 26, 1921.

help from the patella, are responsible for the security of the joint, do not immediately look for ligamentous laxity as one of the first things to be sought for in an examination.

Displacement of the Semilunar Cartilage.

After inspection of both uncovered knees (a methodical examination is always desirable) I test the mobility of the joints in natural movements (starting with the good limb). Especially do I observe whether extension is free. The ham should go flat with the couch and the examining fingers should have no room between the joint and the couch. If the back of the joint will not go down flush with the horizontal, the most probable explanation is that there is something between the ends of the femur and tibia which prevents the full extension. This something is more generally a crumpled or disarranged internal semilunar cartilage. It may be a loose body, but this is very much less common.

It is to the lesser forms of disability that I wish to direct your attention. In my knowledge they are common, they do not necessarily have an excess of synovial fluid associated with them, they need not cause much pain and the true condition present, *viz.*, a more or less rucked up state of the semilunar cartilage edge, is not appreciated. I believe my contention to be true, for I have often rectified the trouble in early cases, without an anaesthetic, by flexing the limb and then quickly straightening with an attempt at rotation during extension. This manoeuvre often unrucks the free edge of the semilunar and then the knee will go down flush with the couch without force and without pain, which it could not be made to do before. The presence of free fluid in excess or a synovitis with a necessary swelling always hypnotizes the patient and sometimes the surgeon and the small offending edge of cartilage is overlooked, which means, in the future, permanent loss of some mobility, pain, attacks of synovitis and gradual deterioration of the joint. Tuberculosis is possibly called in as a diagnosis, the treatment of which serves to render permanent the disability of the joint. When operating on such a case I notice that, if it is an early case, where the cartilage has not been out of position long, the joint surfaces are not injected at all, looking quite normal, but if it is a neglected case, I am always prepared to find and generally do find a condition of red injection in all the parts visible in the joint. This evidence of impending degeneration is allied with increasing disability. When I find much redness on opening the joint I keep the patient from active use of the joint for three or four weeks, instead of allowing him to walk in a fortnight, as I do in cases where the joint is still pale inside. I beg to emphasize to you the importance of this inability to extend the knee-joint fully. If downward pressure be made on the patella, it gives pain and a resilient feeling is communicated to the surgeon's hand, as if something is between the joint surfaces.

The impossibility of proper extension, varying in amount of error with the size of the piece of misplaced cartilage is the main sign of this not uncommon disability, but, in addition, pain on pressure immediately at the line of the joint on its inner

aspect is nearly always present. As well as the limitation of normal extension in these cases, there is present an abnormal lateral mobility, which stands in the nearest causal relationship with the whole trouble.

By putting one palm under the lower end of the femur and the other under the heel, you can, by keeping the thigh bone fixed and using lateral motion at the long arm of the lever by the other hand, elicit any lateral motion at the knee-joint which is possible. Of course, the limb must be entirely passive in the surgeon's hands, a state to which it is not always easy to attain, so much is the attention of the patient drawn to the part. Thus it is always better to start with the sound limb. A considerable and sometimes a surprising amount of lateral movement is found, *i.e.*, the limb below the line of the joint will move laterally apart from the femur, the foot, of course, showing the largest amount of lateral displacement. It is this abnormal lateral movement which allows of the turning over and rucking up of the edge of the internal semilunar cartilage. Some sudden and not necessarily violent twisting movement will cause this in a knee-joint whose ligaments and whose tendons are lax. The subsequent movements of the joint may force the edge back into place so that its folding may be only momentary, but its exquisite edge of razor-like tenuity is never the same and ugly thickening occurs, especially if the act be often repeated and then perhaps its plication is permanent, with the impossibility of perfect extension of the joint. It is to be remembered that there may be much lateral movement in the joint and yet the cartilage may never have been displaced.

Laxity of the Ligaments.

Now this embarrassing laxity of the ligaments, fraught with grave disability to the joint, is, I believe, in some cases congenital. I have examined a number of young children and found occasionally marked lateral movement and though, of course, I cannot say if they grew up with laxity of the knee ligaments, it is to be supposed they might, following the analogy of looseness in other joints, notably those of the fingers and that of the wrist. There can be no doubt, I think, that the laxity can be acquired. A large number of cases has come my way in men who ride a great deal, letting, as they do, the knees fall away from the pommel of the saddle, when an unnatural twist is acquired, the rider being too tired to brace his knees against the saddle. I have operated on a considerable number of my squatter friends and overseers and boundary riders, so much so that I am sure that long hours in the saddle are a cause of this looseness of the knee stays and braces.

Again, synovitis following a sprain of the knee without injury to the semilunar cartilage will, by its excess of fluid, distend the capsule and eventually lead to overstretching of the non-resilient ligaments, hence the importance of early tapping or aspiration. A very disagreeable feeling of uncertainty and insecurity exists in many of these patients with regard to the knee. This is directly due to the looseness of the joint. Now a man or a woman may have considerable laxity of the knee

ligaments and yet never have had the misfortune to get the razor edge of cartilage turned over, but their lives may be rendered miserable by the feeling of instability in the knee, which is often translated into fact. An almost certain sign of a lax knee-joint is seen when the owner goes up and down stairs. Going up with the tendons and muscles taut, no inconvenience is experienced, but coming down with the knee "in the air," uncertainty and insecurity are felt.

Is there any remedy for this varying degree of looseness? My colleagues, lend me your ears, but spare me your smiles! For many a year I have been using a treatment which very generally confers much benefit on patients who are suffering from this looseness of the knee. It is the injection of 0.0024 grammes of strychnine subcutaneously round the knee daily, starting at one point and placing a series of punctures round the joint at equal distances until the original one is reached in eight or ten days. There must be more than mental effect in this procedure, so constant are the expressions of benefit and even entire relief. The *modus operandi* of it is difficult to explain, but of the actuality of the good effects I have no doubt. The integrity of the joint is due primarily to ligaments, which can hardly be affected by the strychnine. It is due in lesser degree to the surrounding tendons, which can be affected through their attached muscles. It is probable that their tonicity is increased, with the result that the joint is tightened.

Operative Treatment.

When the laxity of the joint is great, strychnine can have only an ameliorating effect and operation becomes necessary. The apparent fallacy that taking away something from an already loose joint will make it tauter, is discounted by actual fact.

The indications for operation, I take it, are these:

1. Failure of complete extension due to the permanent displacement of a portion of the internal semilunar cartilage.
2. Excessive laxity of the joints, with the liability to sudden giving way of the column of the lower extremity with, of course, evidence of displacement of the semilunar cartilage.
3. Recurrent displacement of the cartilage with pain and with or without locking of the joint.
4. Recurrent attacks of synovitis in male patients.
5. After severe injury, where the cartilage has been fractured and dislocated and a piece of tissue can be felt out of place at the line of the joint.

Division of the cartilage from one extremity may cause the presence of a large mass of tissue at the line of the joint. This may disappear and appear again soon.

One patient whom I have watched for many years, had a dislocated cartilage, which could be expressed from between the bones at will and would often come out and go in again in walking. I wanted much to operate for its removal, but its owner would not allow me. It has now given no sign of its presence for several years. Such a case, I think, must be exceptional.

Technique.

In the closer definition of the operation I wish to say that I much prefer the short perpendicular incision, which endeavours to split the fibres of the internal lateral ligament, to the curved incisions in use and to the horizontal one. These latter incisions, I admit, give fuller access to the joint, but there is no advantage in this, if you believe with me that it is not necessary to remove more than a portion of the erring cartilage. If you consider that the whole semilunar must come away, or as much as you can get, then the straight incision which I use, is insufficient. I know, of course, that I have against me the very high authority of Sir Robert Jones, but *per contra* I know that I have attained what I may conscientiously call perfect results with the removal of only a portion of the semilunar and the perpendicular incision must do less damage to the joint capsule. With the method I use a division is made near the anterior attachment of the semilunar, but posteriorly. I content myself with cutting the cartilage as far back as is convenient, which generally means somewhat past the middle. The portion left tends to retreat to the roomy part of the joint, beside the attachment of the crucial ligament and it never troubles again. The skin incision is made by me about 2.5 cm. to 3 cm. posterior to the border of the patella, which keeps the scar out of the way of pressure from the pommel of the saddle. The first cut goes through the skin and fat, all bleeding is carefully stayed and the incision through the capsule is made in a line not quite the same as that in the skin. It is made with decision, so as to enter the joint at once, when articular arterial branches can be secured immediately, the operator's left hand preventing by pressure the potential joint cavity becoming an actual one and admitting blood, a manœuvre which I consider very important. The joint is open but a short time; no finger is allowed in the joint and but little blood. The capsule is closed by thin silk sutures and the skin by silkworm gut. A bandage is applied very carefully, no splint being used. Before the end of a fortnight, some active movements are allowed and in three weeks the patient can do what he likes. In early cases I shorten these periods, but when I have found, as I do in long-standing cases, much injection of the joint, perfect recovery is longer. Strychnine may be very useful occasionally, but I do not worry much about massage. I have had no disasters, but I am meticulously careful about asepsis.

Treatment of Fractured Patella.

Of the propriety of open operation in cases of fracture of the patella I have no doubt. It fulfils two most important indications, one as regards the joint, removal of blood, one as regards the fracture, removal of tissues from between the fractured surfaces. In addition, it allows of excellent coaptation of the fragments and the continuance of this coaptation. A curved incision with the concavity downwards gives immediate access to the joint, when the flap is turned down. Blood clot is expressed from the joint; if there appears to be more which is not evacuated with external pressure, I introduce a rubber catheter and through it a stream

of saline solution, with as much tenderness as if I were seeking clots or foreign bodies in cerebral tissue. A large curved perineal needle is now entered on the outside corner of the upper fragment and carried round the upper fragment at an appropriate depth and when the point of the needle emerges at the inner angle of the upper fragment it is threaded with kangaroo tendon or platinum wire, which is then drawn through. In a similar manner the lower fragment is encircled, the tendon or wire tightened and the knot adjusted on the outer side of the joint, care being taken that the fibrous fringes which tend to hang into the fracture, be turned up before the surcingle is finally tightened. Sometimes it is better to fix them with a suture or two. The skin wound is now closed without drainage and an equable pressure applied by a bandage, no splint being required. All this can be accomplished in seven or eight minutes. Putting the wire through the fragments takes much longer and, although, since the introduction of rubber gloves, the surgeon fears less what is called the margin of error in this joint, it is very advisable to keep the parts open as short a time as possible. Drilling the bone for the wire is difficult and has also the disadvantage of possible cracking of the lower fragment and even of displacing it from its bed when it is small and the proper level of the bony coaptation is much more easily achieved by the surcingle and should it be poor at first, a second attempt does no more harm than waste a little time. Most excellent results have followed this method in my hands.

Penetrating Wounds of the Knee Joint.

Penetrating wounds of the knee-joint are much less common in civil than in war practice. May I detail a case which exemplifies my treatment in such emergencies? A youth was brought down from the upper Murray. Forty-eight hours before I saw him he had fallen on a piece of broken glass and received a wound into his knee-joint. Examination showed him in much pain, with a flushed face, a rapid pulse and a temperature of 38.6° C.. The wound was about 2.5 cm. long above and to the inner side of the patella. It had inflamed edges and from it issued pus and thickened synovial fluid. The joint was much swollen, very painful and tender. Realizing that I should only do harm by meddling with the angry wound, with fine military instinct I determined to outflank it and made a stab wound above the patella through which a rubber catheter was introduced into the joint with a stream of warm saline lotion. I was glad that a frontal attack had been avoided, as the stream issuing from the joint carried out with it at first a good deal of purulent material, which an entering finger would have carried further into the joint. This irrigation was carried out by means of two new stabs on the following days. The stabs, which were made with a bistoury, were closed with a stirrup suture. The traumatic wound was very carefully dressed as regards its immediate neighbourhood with methylated spirit and a stream of oxygen gas was allowed to play upon the wound itself. The result was entirely fortunate, as the youth grew up to be a man who went to the great war.

When it fell to my lot to see bullet wounds of the knee-joint in military practice, I bethought me of the several cases in which I had used this method of irrigation, notably of one in which the through-and-through wound had been made by a Martini-Henry bullet discharged at close quarters and, although suppuration had ensued, a good result had followed.

My practice crystallized in this way. When the joint was not distended, it was left alone, the external wounds being painted with iodine and the patient put at rest, but when swelling was present in the joint, a stab wound was made and a rubber catheter introduced with a stream of hot saline solution. This would distend the joint further at first and then two small parabolic streams of saline solution and synovia would issue from the two wounds made by the bullet. These streams were continued for several minutes. Usually there was no swelling the next day, but, if there was, the little operation was repeated at another place. This procedure has the advantage of letting the surgeon know if much blood has been extravasated into the joint cavity. I was able to trace some of these patients and some I have seen by chance and the results were perfect. Of course, perfect results might have occurred in some of them without interference, but it is strongly imprinted on my mind that this was the proper treatment in such cases, though a few unnecessary operations may have been done.

Shell wounds were, of course, infinitely worse and were often complicated by the presence of a foreign body. Nothing but amputation would save many of these patients, but several points were borne in upon me. I learned that passive drainage of the knee-joint is as unsatisfactory in military work as it is in civil (unfortunately I did not see the Belgian method of open drainage); that even in a badly inflamed knee-joint there is probably one portion of the joint which is still a cavity and not embarrassed with masses of granulation tissue. This open area can be utilized for retrograde irrigation and here you will find that much good can be achieved by using a stream of oxygen gas through the catheter. A splendid result in private practice is to my credit in a case in which amputation loomed large, but was avoided.

It was a source of regret to me when I had time to think in a hospital ship off Gallipoli that I was really in a field ambulance or a casualty clearing station and could not see end results. All the same, I commend this method to you with confidence.

Again, if you wanted a splint for a knee-joint, there was nothing like Thomas's. In 1915, when I was told in Egypt to prepare a hospital ship for overseas service, I ordered 150 of Thomas's lower and upper extremity splints to the amusement of my colleagues on board, but directly we got into work the splints disappeared very rapidly and the engineers were constantly replacing them for us. I look back with pleasure to the happy chance which induced me to gather so many Thomas's splints for our wounded.

Gonorrhœal Arthritis.

In gonorrhœal knee-joints with much fluid I am sure that removal of most of the fluid through a

rubber catheter introduced by a stab incision, followed by irrigation with saline lotion by the same means, has a very definite place in treatment, in spite of the use of sensitized vaccines. It has to be repeated several times. Later in the disease, when the fluid is being absorbed and adhesions are forming, oxygen introduced under considerable pressure is certainly effective in limiting the formation of disabling fibrous tissue. It can do no harm and may preserve useful space in the joint.

Tuberculous Arthritis.

Coming now to tuberculosis of the knee-joint, I have nothing to tell you of interest as regards tuberculosis starting in the synovial membrane, unless it be to remind you how it may imitate tuberculosis of the peritoneum, by having occasionally a very acute onset of symptoms, which is distinctly confusing from the diagnostic point of view.

Of tuberculosis arising in neighbouring bone, I would like to speak more fully. The text-book remark that the first deposition of tuberculosis is in the bone in children and adolescents and in the synovial membrane in adults is undoubtedly true in the majority of cases, but there is a fair number of exceptions.

Much confusion as to the starting point of tuberculosis of the knee-joint may be avoided by the recognition of the fact that the symptoms of any disease of the vicinous bone, either tibia or femur, can only be expressed in terms of the joint, *i.e.*, that the bones forming the knee-joint have no symptoms of their own apart from the joint for some time after the initial deposition of the tuberculosis element in their substance. A limp belongs to early tuberculosis of the synovial membrane, even as it does to early tuberculosis of the ends of the femur and tibia. A realization of this is to my mind essential, as I believe in the early surgical attack of tuberculosis in the extremity of either bone. If symptoms do not speedily and entirely subside with rest as nearly perfect as we can give it, I am confident that direct action is indicated.

A symptom needing elucidation, which belongs to tuberculosis of the synovial membrane and the bone alike, is fluid in the joint. We are apt to confine it in our minds to the synovial lesion, but a tuberculous focus in the bone will cause a collection of fluid in those neighbouring tissues, which can be made to accommodate fluid. This occurs when the focus has spread into close proximity to the tissue and the tissue is generally the joint. The fluid so accumulated is non-tuberculous for a long time. Proof of this is furnished by an interesting example which came my way some years ago. A young lady had a limp, allocated to her knee-joint and due to a tubercular focus in the head of her tibia, but the focus, instead of enlarging towards the articular cartilage, progressed towards the subcutaneous surface of the bone and there formed a fluctuant swelling. This was opened and was found to be due to a collection of fluid ten to fifteen cubic centimetres in quantity which had been poured out beneath the periosteum, raising it from the bone. This fluid was free of tubercle bacilli, microscopically and otherwise, and

I had to gouge through a thin stratum of good hard bone before I reached the softer focus.

Thus, if a limp and swelling of the joint due to fluid be a symptom and a sign of tuberculosis of the head of the tibia, the diagnosis of the origin of the disease is difficult. However, the discovery of a tender spot in the head of the tibia or in the inner condyle of the femur will prevent us from making a mistake as to the original locality of the disease and this tender spot should always be looked for in any systematic examination of the joint. It is always definitely circumscribed, very different from the generalized less acute tenderness of the synovial affection. A similar tender spot may be obtained on pressure in early hip disease when the focus has appeared in the trochanter, a not unusual place in my experience. Here, again, with the exception of the tender spot, the signs and symptoms are entirely referable to the joint. The limit to which operation may be justifiably carried, is considerable and in one case, that of the sister of a well-known Melbourne surgeon, I scooped out the whole of the cancellous tissue of the head of the tibia, to such an extent as to feel the resilience of the articular cartilage. The cavity took months in obliteration, but eventually the cure was complete and has remained so.

The tibia lends itself to gouging, but the femur is not so convenient for this procedure. However, by entering the bone above the adductor tubercle and pushing forward the big sac of the knee-joint, a good entrance can be made into the diseased cancellous tissue.

The assistance afforded by X-ray examination must not be neglected, as well after as before operation.

The upper of the bones forming the joint suffers from another disability in some cases, when the surgeon desires to remove radically a tuberculous focus. The femoral epiphysis seems to me to be much more liable to be the seat of this disease than is the tibial. It is certainly bigger, containing more cancellous tissue and it is much invested by the structures of the joint. Thus the results of direct action in the case of the femur are liable to be less brilliant than when the surgeon turns his operative attention to the tibial focus, more accessible to his gouge. The presence of an epiphyseal cartilage, however, does not, in my opinion, vitiate the propriety of removing as entirely as possible the nidus of tuberculous material.

Rarer Traumatic Lesions.

Certain other injuries demand brief mention. Separation of the lower femoral epiphysis is of great rarity, but of great importance. It usually occurs from forcible over-extension of the joint, with the result that the lower end of the diaphysis slips back into the ham, leaving the epiphysis in front. Curiously enough, in two out of the three cases of this injury that I have seen, the epiphysis had been forced back and the diaphysis in front. Replacement under an anæsthetic after X-ray examination is the treatment, the key to which, as in the upper humeral epiphyseal separation, is the management of the long streamer of periosteum, which is stripped off posteriorly in the femur and from the external

aspect in the case of the humerus. These cases are the reverse of satisfactory, even when operation is used. Blood in the knee-joint following fracture of the condyles or the tibia is sometimes very considerable in amount and, if left, spoils the movements of the joint greatly. If we open the joint in fracture of the patella for the removal of a very moderate amount of blood, how much more insistently should we determine on the evacuation of the much larger quantity of blood which has issued from the fracture of the larger and more vascular bones. A stab wound and the rubber catheter or drain tube may be sufficient to evacuate the blood, but if the clots are big, it is advisable to open the joint more freely.

Rupture of the crucial ligaments, which reveals itself by allowing very great lateral movement and which, if left untreated, leads to hopeless disability of the joint, is amenable to surgical treatment, the greatest difficulty of which is to find sufficient access to the depths of the articulation with the least destruction of the fibrous envelope. Longitudinal splitting of the patella and of the quadriceps tendon probably affords the best route.

Tearing of the internal lateral ligament presents a very ragged solution of its continuity, which is best remedied by operative suture with pruning of its raggedness through an incision at the inner side of the joint. If the hiatus in the ligament is great, a reinforcement of tissue may be obtained from the neighbouring gracilis tendon, as advised by Hey Groves.

Disease of the Patella.

The surgery of the patella, apart from fracture and dislocation, is but small. Disease of its substance is rare and tumour very rare indeed. In the Melbourne Museum Sir Harry Allen can point to but one specimen of sarcoma of the patella. Dr. Mollison has mild memories of a myeloid years ago, but can give me no particulars. Subcutaneous gumma may ulcerate to its anterior surface, but that now would be a curiosity, as is primary tuberculosis of the patella.

Several dislocations have been seen by me, including two cases of that startling kind where the patella remains on edge, its articular surface looking inwards, instead of backwards. Old ladies who had tumbled down stairs, furnished these most interesting misplacements. The greater obliquity of the female femur may account for this, as I have not been able to hear of one such in a male, but one would think there must be some laxity of the *ligamentum patellæ*, with consequent too free mobility of the giant sesamoid in any case of this dislocation. The danger, a very real one, in reduction was in consummating the half turn of the patella by letting the articular surface slip forward instead of backward. Force applied with a wooden mallet, tempered by the intervention of a tightly rolled bandage, will be found very useful in cases where the patella refuses to be shifted merely by manual efforts.

Slackness of the *ligamentum patellæ* certainly exists in some people and is probably due to a congenital fault similar to that which I am convinced exists at times in regard to the other ligaments.

Such patellar mobility must be detrimental to the integrity of the joints, as the patella possesses a subtle influence, inasmuch as it is part of a closely fitting strap. When the pregnant hinges of the knee give birth to loose bodies the surgeon may have an almost too interesting game in their pursuit in and delivery from the joint. It is my rule never to operate in such a case, unless the loose body is felt the moment before operation. During the production of anaesthesia the loose body is steadied most carefully. The surgeon cuts on it and expresses it, as a rule, easily. It is not permissible, in my opinion, to open the joint unless the loose body is immediately beneath the part to be opened at the time of incision. Anything like a roving commission with the finger in the joint is to be deprecated from several points of view. It is especially easy under such circumstances to fail to discover even a large loose body, so roomy is the joint and so many are the recesses where a body can lurk undetected. I have a very distinct mental negative chemiotaxis against putting my finger, even with an unimpeachable glove, into the knee-joint unless it is unavoidable. Sometimes a skewer or hatpin may be implanted through the skin into the body, which is thereby fixed, but it is apt to make for cumbersome and indecisive cutting of the capsule. Skilful fingers are much better. It is astonishing what little trouble and harm a loose body too large to move about freely will give. It is the smaller ones which are more damaging and more elusive. Sometimes a joint is very prolific indeed. I remember one knee, whence medium-sized loose bodies to the number of sixteen had been removed by various surgeons in Adelaide, Sydney and Melbourne with but moderate impairment of the joint. It is not every loose body that need be removed. I have at present under my care in Melbourne a lady whose left knee contains a considerable body, which keeps itself to the upper and outer part of the joint in a harmless way. It shows well in the skiagrams, which, however, may be a very fallacious guide in these cases. Several times I have met with an epiglottis-shaped growth of cartilage growing from the articular edge, which has simulated the classic symptoms of loose body, this being accomplished by the free portion being insinuated between the bones.

Syphilitic Lesions of the Knee Joint.

Syphilis in connexion with the knee-joint needs an historian, who will have a difficult task. We all know the swelling of the joint that may occur in the secondary stage, the fluid of which becomes absorbed during general treatment and we all know the gummatous mass which may invade either the bony component of the joint, but between these there are conditions of varying severity which occur during the later secondary stages, which I believe do not necessarily resolve and are apt to leave the joint injured, in spite of treatment, local and general. One is on firmer ground in describing syphilis in connexion with the *subcrureus* bursa. There is no doubt that inflammation occurs here due to syphilis and that a thin, gum-like fluid forms, which may perforate the wall of the bursa and present itself on either side of the joint, looking as if it must be connected

with the joint. The contents, too, suggest synovia. I have knowledge of a number of such cases in both congenital and acquired syphilis. The joint, as far as I know, tends to remain intact. The causes of inflammation in the various bursae round the knee-joint seem various; thus I believe that ordinary pyogenic organisms are responsible in the case of the prepatellar bursa, as a rule, the tubercle bacillus for the inflammatory state of the bursa beneath the *ligamentum patellae*, gouty poison when the bursa under the *sartorius* is inflamed and syphilis when the *subcrureus* bursa is at fault.

Charcot's Joint.

Charcot's joint is a condition which should come to one's mind when a knee with anomalous symptoms is seen, a knee with chaotic masses of bony material surrounded by fluid in irregular cavities. The difficulty of diagnosis is great, especially in the earlier stages, unless we remember the possibility of a Charcot's joint. The source of fallacy generally is that the symptoms are noticed after an injury of moderate severity, which injury exercises an hypnotic influence on the patient and sometimes on the surgeon. On two occasions have I saved patients from excision of the knee, proposed to them by surgeons of experience. Luck favoured me in the first case, as I happened to notice the inequality of the patient's pupils as he entered the room. The symptoms, though anomalous to the eye and finger, are not so to X-rays, which should always be used. The tabetic symptoms may be strangely inconspicuous compared with the degeneration of the joint. If I may be allowed to be academic for a moment, I wish to say that I stand *supra vias antiquas*. I believe in the methodical examination of the knee—inspection with the patient at rest, inspection with the patient in action, palpation, determination of the limit of active and passive movements, search for abnormal movements. Especially do I value systematic looking for the exact spot of tenderness and the localization of pain. How easily pain may confuse the examiner when it is not properly interpreted! How it may be and generally is distinct from tenderness! Pain may be due to something in the knee or in close proximity to it or it may be referred from above or below. From above, we have the classical reference from disease of the sacro-iliac synchondrosis and from disease of the hip-joint. We also have a referred pain from above, which led me so far astray as to open a knee-joint unnecessarily, a mistake of the first order. This pain, which was undoubtedly and continually present on the inner aspect of the knee, was a reflexion from an inflamed ilio-psoas bursa, which gave no intimation of its presence for some time. A friend of mine, a most excellent surgeon, had already opened the joint. I followed his example, thinking there must be something wrong there; but the pain continued and was explained many weeks after by the appearance of an abscess in Scarpa's triangle, whose opening gave the diagnosis of inflamed ilio-psoas bursa. The contents of this abscess seemed rather unusual, but the additional diagnosis of syphilis was not made until some time after, when undeniable lesions appeared. Treatment healed this

obstinate sinus rapidly, when once the specific origin was ascertained.

Of pain referred from below, the origin of which is easily overlooked, the presence of flat-foot in an otherwise strongly made person affords a good example. Thus, an athlete came to me complaining of much pain in the inner side of the knee whenever he played cricket. He had splendid muscles and was a heavy man. After much unsuccessful examination I found the cause in a flat foot. And a properly shaped piece of india-rubber cured his pain.

Tender Points.

Of tender points about the knee there are many. The physician's pleximeter may be very useful in this regard. The tubercular tender point on the inner condyle is of the greatest diagnostic value, as is the more easily found one on the inner tuberosity of the tibia. Then there is the tender spot along the insertion of the internal semilunar cartilage, almost at the line of the junction of the articular surfaces, also the spot of tenderness due to inflammation of the *subcrureus* bursa; but here we certainly have swelling to help us. Again, the *sartorius* bursa becomes intensely tender in gout, that bursa-loving disease. It is remarkable how much more the surgeon's attention is directed to the inner side of the knee rather than to the outer, being mainly due to the greater accessibility of the joint on the former aspect.

But two cases have come my way where I thought that the external semilunar cartilage was out of position. I proved myself right in one case, but the other patient refused operation. One can be neat, quick and effective much more easily on the inner side than on the outer.

Value of X-Rays in Diagnosis.

The means that X-rays afford must not be neglected. They give most valuable results in tumour and abscess of the bone, less reliable data in tuberculous disease and internal derangement of the knee-joint. There are two instances where their aid is essential in making a diagnosis. The recital of two cases will illustrate my contention.

A powerful, middle-aged man had a very severe influenzal illness. Six months after he began to have pain in his knee, which was not definitely localized. It spoilt his rest and he soon lost health and was in great misery with it. He limped, but was able to go about. No treatment did any good. A skiagram showed signs of an abscess in the lower end of the femur, just above the articular surface. This was found and evacuated by an incision immediately in front of the *adductor magnus* tendon, displacing the great *cul de sac* of the joint. The pain left at once and perfect recovery followed later; so satisfactory a termination would have been impossible without the help of an X-ray examination.

The other example is that of a rarefying osteitis in the head of the tibia, following a blow. A dull ache, worse at night, came on a good many weeks after a young man had received a sharp knock on the head of his tibia. A limp followed and the pain got gradually worse. It was not continuous, as was the pain due to abscess in the case just related,

but it appeared after walking and at night and a change of the weather seemed to exacerbate it. A skiagram showed a rarefaction more definite than that seen even in tuberculosis of the bone; the gouge was directed to the exact spot by the help of the skiagram with curative effect. This is a common class of case, which was elucidated in this country by Sir Thomas Fitzgerald, who drilled for it with much success. When he failed it was because the drill or gouge was applied at the wrong place, a misfortune that a skiagram would have prevented.

Some rare conditions that I have seen, such as popliteal aneurysm bursting into the joint, I will not weary you with. Neither will I describe the many degrees of that mere exaggeration of the normal condition which is over-dignified by the name of *lipoma arborescens*.

You will notice that I have avoided the name of that greatest of men, in whose honour orations are delivered all over the civilized world. There is no need to mention it, for does he not dominate silently all we do and all we think?

THE CLINICAL MANIFESTATIONS OF RESERVE OF THE HEART MUSCLE.

A PRELIMINARY REPORT.

By Norman W. Markwell, M.B., Ch.M. (Sydney),
Brisbane.

In 1911 R. Cabet¹ declared that a correct diagnosis of chronic interstitial myocarditis, of acute degeneration of the myocardium and of the fatty changes frequently associated with pernicious anæmia was largely a matter of chance. He maintained that there were no clinical symptoms nor physical signs constantly coupled with these pathological conditions. The necessity for research in this direction is therefore plain.

About this time I was brought into daily contact with patients suffering from beri-beri at Thursday Island and it soon became clear that more information was needed for the solution of the problem of the cardiac involvement of this disease. I therefore undertook an investigation. This early became centred upon the interpretation and analysis of the first sound of the heart. Graphic records were employed from the first and during the first three years I endeavoured to train my auscultatory acumen. In the course of my studies and observations I arrived at the conclusion that ventricular systole consists of two periods, the first a period of rapid change of tension and the second a period of comparative equilibrium following on the first more or less abruptly.

The work has been carried out by observations on young adults suffering from beri-beri and acute rheumatic infection. The hearts of these patients were probably normal before their illnesses. It will be necessary to ascertain whether variations occur in the normal heart at different ages and what alterations occur in the first sound when hyper-

trophy occurs in chronic disease, whether primarily in the heart or secondarily from other chronic illnesses.

Ventricular movement during ventricular systole is divided into two periods, a "spiral movement," followed by a more quiescent phase. The curves of Chaveau, Yandall Henderson and others reveal that the interventricular pressure during ventricular systole rises rapidly at first and later passes somewhat suddenly into a state of equilibrium. An analogous bi-phasic character can be detected in myocardiograms and also in the cardiac tracings of the frog's heart, both in the body of the animal and also in the bloodless state after excision.

From my clinical observations, evidence has been adduced to show that an initial intrinsic period of ventricular systole exists and can be recognized. This initial intrinsic period is the measure of the reserve of the heart muscle. Its duration can be determined by the trained ear and it can be demonstrated in the cardiogram. Shortening of the initial intrinsic period is a necessary accompaniment of a lessening of the reserve. At the commencement of such a condition there are, typically, no heart symptoms.

Immediately after the commencement of ventricular systole the heart impinges on the unyielding tissues in front of it. In the normal, this typically occurs at the apical beat. The periodic incidence of this moment is variable. For the sake of graphic representation I have termed this moment *B*. During the spiral movement of the heart on to the chest wall the main pump, the left ventricle, carries the subsidiary pump, the right ventricle, in front of it. Both ventricles contract synchronously. The termination of the initial intrinsic period referred to above is called *C*. The anterior wall of the right ventricle approaches the anterior chest wall just before *C* and tends to recede immediately afterwards. At *C* another impact occurs on the unyielding structure of the chest wall, owing to this movement of the right anterior ventricular wall. Such movement is caused by the structural difference between the two ventricles. What structural difference is responsible for this mechanism has not yet been determined. It is either the different arrangement of the muscle fibres or a hypothetical difference in the volume content of the ventricular cavities or both. If such a difference of content does exist in the normal heart, the cavity of the right ventricle must be greater than that of the left ventricle.

C in the normal young adult occurs approximately 0.15 second after the commencement of systole. I have not yet had access to electrical instruments of precision. This point can be determined in the cardiograms taken over the right ventricle.

The systolic period to the "point *C*" can be gauged by auscultation. The normal first sound is composed of two main elements. The first occurs at its commencement, viz., at *B*, and the second at its termination, viz., at *C*. The "*B* element" is loudest in the normal subject at the site of the apical beat. Here it is the loudest sound heard in the præcordial area; it is lower in pitch than the "*C* element" at its optimum position and than the second sound. The "*C* element" in the normal subject is at its

¹ "Medical and Surgical Papers of the Massachusetts General Hospital, Boston," Volume III., No. 1, October, 1911, page 401.

optimum just to the left of the sternum toward the lower part of the præcordial area. Since the "B element" occurs a little later than the commencement of systole, the "B-C" interval is slightly shorter than the "systolic period to the C point." Both the B and the C elements are produced wholly by impact, *viz.*, the two impacts mentioned above. The first sound or one of its elements may be inaudible at times. This may, however, be rendered audible by manœuvres such as a change of position. This is a simple matter in the class of cases with which the investigation has so far dealt.

I have found that attention to these points in the first sound of the heart can be used in differential diagnosis. For example, on the one hand, the fate of a patient with beri-beri may be determined and on the other hand, it is possible to ascertain whether in a given case the heart muscle is at fault or whether some extrinsic process is involved, such as a disturbance in the nervous system in the so-called "disordered action of the heart." The details of the research have been set out in an essay which I propose to publish shortly.

I have described in this essay the variations of pitch and tone of the first sound which have to be distinguished to base the diagnosis and prognosis of involvement of the heart muscle. This can be done with certainty when we are dealing with those cases of acute disease in which the facts of the history and other physical signs convey the knowledge that the heart has not previously been involved in gross morbid changes. The investigation has not yet been carried out in connexion with the more complicated cases of heart failure occurring in those patients whose hearts have been subjected to previous gross morbid changes. These include those with chronic heart disease, those with general chronic disease, *e.g.*, pernicious anæmia or kidney disease, and those who have been subjected in the past to acute diseases of the heart.

It is mainly in connexion with this complication of the problem that the investigation will proceed. It must first be determined what are the typical alterations in the length of the "B-C interval" in chronic cases whilst still complicated before failure of similar hearts can be confidently appreciated.

CONVENTION AND DECAPSULATION IN ACUTE NEPHRITIS.

By J. Forbes Mackenzie, M.B. (Melb.),

Surgeon to In-Patients, St. Vincent's Hospital, Melbourne.

OURS, one of the oldest professions in the world, shares with those who make our roads the savage habit of adherence to convention. We know that there are fads and fashions both in medicine and in road making and curiously enough largely associated with tar.

We are all of opinion that some recasting of ideas as to methods of road making is very necessary. The old ordinary type of road as made has proved itself so unreliable, although made as our grandfathers used to make roads.

Now, I am not attacking our profession any more

than I would dare to attack a road maker, as in both cases weight of metal would be against me. All I ask is that we, as a profession, should recast some of our ideas with regard to a disease which by convention occupies an unhappy position amongst us. The one disease of which the ætiology, pathology and treatment have become practically conventional is acute nephritis. We have become thoroughly accustomed to regard this disease as one affecting the young, following some disease, such as scarlatina, characterized by œdema, characteristic urinary and *post mortem* findings. Most patients recover under conventional treatment. One might have said the same of appendicitis. Many, however, do not and many who have apparently recovered, go on from a very unsatisfactory course of a typical character, a precarious hovering on the brink of the uræmic precipice, with the inevitable end at an early age.

There has been little or no advance in the treatment of this condition for, one might say, half a century and I dare say our profession fifty years ago treated the condition with just as satisfactory or unsatisfactory results as we obtain nowadays.

Is it not time we abandoned convention—take notice of the physician up to his limit—and that, to my mind is 7 to 10 days; after that act promptly. My experience and that of others (Osler, "Practice of Medicine") is that in cases that are going to subside, urine excretion will increase fairly rapidly and the patient will show subsidence of œdema after seven to ten days. The case that does not subside after this time I would regard as dangerous and I would subject all such to bilateral decapsulation, either in one sitting or in two. We do not dream of leaving the brain under any pressure for longer than a few days, although, of course, in brain cases we get certain helpful evidence from the *fundus oculi* early, which decides for or against operation. We do not leave any other tissue or organ under tension; the salivary glands, testis, liver have all been successfully treated for inflammations by incision or puncture. I recognize that the tension theory of the kidney state will be and has always been assailable; but it is the only theory which can explain the good results so rapidly following decapsulation in cases reported in journals.

All my cry is: Why wait? The operations performed seem to be done too late. If the operation can be done in a broken-down old patient with failing heart, anasarca, etc., surely it can be done more safely in a young person at an early stage of illness. Why wait until the kidney by inflammation and compression has forced itself into a state of necrosis and fibrosis? The opponents of decapsulation say three things at least: (1) That most patients get better themselves or under ordinary treatment. (2) That if you decapsulate the condition relapses in four or five years, no matter how good the result is shortly after operation. (3) That there is no proof that it is capsule tension that causes the trouble.

In answer to No. 1, as before stated, the majority of patients with appendicitis would probably get better. In answer to No. 2, the reason probably is, if their statements are correct, that the operation has been too long delayed. In answer to No. 3, what proof have we that it is not rupture of capsule

which explains recovery in patients who get better spontaneously or under ordinary treatment.

Another type of case which in my hands has benefited by decapsulation, is that type of pyelitis or pyelo-nephritis with bacilluria, very obstinate to treat by ordinary means. Personally, I never complete an exploration of a doubtful kidney without stripping the capsule and I am sure in at least two cases I have saved a kidney by doing so.

I should like the views of others on this subject. The children's hospitals have more material and opportunities than general hospitals and should be able to give us some figures; but apparently the view holds there that the patients must be left until they are acutely ill and are responding no longer to ordinary treatment. If anyone has operated once or more often in the early stages of these cases, I shall be glad to hear from him.

THE TREATMENT OF URETHRITIS.

GENERAL PRINCIPLES AND RESULTS.

By Robert J. Silverton, M.B., Ch.M. (Syd.), F.R.C.S. (Ed.),
Honorary Urologist, Coast Hospital, New South Wales.

IN the columns of THE MEDICAL JOURNAL OF AUSTRALIA there was recently waged a wordy warfare about the merits of irrigations in the treatment of urethritis. It seemed to be forgotten by the advocates of irrigation that the washes are but a part of the modern management of urethritis. Other means are necessary to accelerate and effect the removal of the offending organisms. In the final stages of treatment the means of eradication of the organisms constitute at the same time the tests of cure. Irrigations are all-important in the early stages, but are only accessory methods of treatment in the later.

To indicate the general principles of the modern methods of treatment is the purpose of this paper. It has freely been stated that the instrumentation included in modern treatment does harm and that better results are obtained by rest and medicines alone or with vaccines superadded. The reply to this statement is that instrumentation in skilled hands is harmless and at the same time necessary for a complete assurance of cure; vaccines are often harmful in the earlier stages and are only of value in a small percentage of the chronic cases, while the rest and medicine method has of late repeatedly been shown to be inefficient.

Treatment by Rest and Drugs.

To deal with the rest and medicine method first, the value of rest in the early stages will be admitted by all, but once the quiet or "chronic" phase is reached, its positive virtues cease. Now the requirement is the stimulation of the tissues to a moderate grade of inflammation in order to throw off the tenacious urethritic germs. Drugs are only useful as sedatives to aid the rest treatment in the more acute stages; as antiseptics they are valueless in the urethra. Shohl and Deming have shown that hexamine, our strongest urinary antiseptic, has no

bactericidal action in the urethra; the urine, though strongly formalinized in the bladder, passes too quickly through the urethra to act (*Journal of Urology*, October, 1920).

Vaccines.

Vaccines in the treatment of surgical diseases of the urinary tract have been much over-rated and very often are incorrectly employed. They seem to hypnotize the medical and lay mind alike. For instance, when a pyelitis is diagnosed clinically, vaccines are resorted to at once and, worse still, continued for months or years until hopeless damage is done; this, instead of immediate and complete urological diagnosis with consequent rational treatment. It is the same with urethritis. Vaccines have their place, of course, but their limitations should be recognized. In experimenting with them in the more acute stages of urethritis, I have done harm even with tiny doses. In the chronic phases the conditions are entirely different; large doses fairly quickly increased at comparatively short intervals should be the rule. If no benefit is seen in a few weeks, the vaccines should be discarded.

Management of Urethritis.

I shall now discuss briefly the management of urethritis. For hyperacute cases rest with local and general antiphlogistic measures must be employed. In acute cases irrigations should be used in addition. Potassium permanganate is still unchallenged in gonococcal cases, while oxycyanide of mercury is powerful in the non-gonococcal. Silver nitrate is favoured in the later stages of both forms. A safe, general rule is never to use urethro-vesical irrigations until all subjective symptoms have disappeared. Treatment is commenced with anterior irrigations of a strength just comfortably tolerated; 1 in 6,000 to 1 in 4,000 is the usual initial strength with either permanganate or oxycyanide. The increase in concentration is rapid or slow according to the toleration of the urethra. A sufficient maximum strength is 1 in 1,000. After all subjective symptoms have disappeared, urethro-vesical washes are given, similar initial and progressive strengths being used. Irrigation should be carried out twice a day, if possible. Sandalwood oil and alkalies are useful sedative drugs.

With anterior infection only, the diffuse haze of pus in the urine will disappear in a week or less; but with posterior infection superadded it will last for several weeks. On disappearance of the diffuse haze the strength and number of the irrigations should be decreased and the anterior urethra explored in order that infiltrations may be diagnosed and localized lesions dealt with. Diagnostic anterior endoscopy is best performed with an auro-urethroscope, preferably with internal illumination, as in the Gordon type. The value of operative endoscopy has been over-estimated by many writers and especially by the inventors of the various instruments. To be of any use these delicate manœuvres must be performed through a simple, open, well-lit tube by means of the slenderest and most delicately-balanced instruments. Where a cut is made and blood flows, one should be able to swab immediately;

windows and other accessories prevent this. For these purposes the simple tube of Luy is undoubtedly the best. Lacunar or glandular abscesses are opened with a slender sickle-shaped knife. Inflamed glands are filled with a small amount of strong antiseptic by means of a fine, probe-pointed, elongated syringe. Apart from these measures, the value of endoscopic operations is unsupported by anatomical and pathological study of the normal or diseased urethral wall.

For further direct attack we depend on the Kollmann dilator, an instrument of the highest value. Dilatation of the posterior segment of the urethra is only very rarely indicated, but in the anterior portion of the urethra it should be employed, even if not indicated for therapy, as one of the tests of cure. Just as an air-inflation addition to the Luy's tube is necessary to reveal the deepest portion of the bulbous portion, so is a curve on the end of the dilator necessary if we desire to dilate the whole anterior end of the urethra at once. The commonly used straight instrument fails to dilate the deepest part of the anterior canal.

Lesions of the posterior part of the urethra are almost always the result of disease in the prostate or vesicles; the commoner methods of treating these glands are too well known to need detailing here. With improvement in the glands the lesions of the posterior canal usually disappear; should they remain operative endoscopy will be required. The McCarthy or the Brown-Buerger cysto-urethroscope is the ideal instrument for this difficult work, as well as for diagnosis. I prefer the former as it has no turned-over or beaked tip to prevent withdrawal into and complete inspection of the prostatic and membranous segments of the urethra. With this instrument, water distension and the diathermy point, operative measures have for the first time become really efficient. Local anaesthesia suffices in most cases, but, if it is desired, for instance, to destroy a large lesion in one or two sittings, it is better to employ general or low spinal anaesthesia and to complete the burning rapidly. The principle of the simple endoscopic tube and direct attack must give way in the posterior part of the urethra to the lens instrument with water distension. Not only is the view clearer and magnified, but the operative work with the diathermy point is more effectual and less disturbed by blood.

In the later stages of treatment irrigations need only be used in conjunction with massage, dilatation and other such manipulations. On the principle of stirring up a moderate grade of inflammation in the final stages strong instillations may be given at intervals of not less than five days. Silver nitrate is unexcelled for this purpose and is used in the anterior portion of the urethra in concentrations rising from 0.2% up to 1%, if necessary; in the posterior part from 1% to 5%. Strong injections into the anterior part of the canal must be avoided if urethroscopy discloses any sign of submucous infiltration; this complication is best treated with the Kollmann dilator.

If treatment is commenced while the urethritis is still anterior, one may expect under good conditions to prevent spread to the posterior part of the canal

in 90% or more of the cases and to effect eradication of the disease in an average time of about four weeks. No patient should be discharged, however, without a microscopical report on the fluid expressed by massage from the prostate and vesicles; the disease, though seemingly anterior throughout, may spread without symptoms or signs to the posterior part of the urethra and its adnexa.

Should the posterior part of the urethra be already infected at the beginning of treatment, it will take on an average about eight weeks completely to eradicate the disease. This figure simply represents the average worked out from a large series of cases; some patients will be better in a month, while others take many months. It should be explained to the patient at the beginning that treatment may need to be protracted. Attention should be concentrated in the early stages on preventing serious complications, in the later on active measures to eradicate the disease.

A glance over the tables which follow will demonstrate the value of modern methods of treating urethritis. One of the thoughtless criticisms frequently levelled at instrumental methods is that they may do harm by irritation or trauma. Certainly they will, if used unskilfully or at the wrong time. Nothing is easier than to produce an epididymitis if instrumentation is badly timed. On the other hand, consider the enormous value of urethroscopy, for instance, in diagnosing early a submucous infiltration and so indicating measures which assuredly will prevent the later development of stricture. Provided the patient will take reasonable care of himself during treatment, modern methods enormously diminish the incidence of complications. Epididymitis developed during treatment in only 3% of the 481 patients whose cases are tabulated below, while metastatic lesions were represented solely by one case of synovitis of the ankle-joint. Only 6.5% of the patients needed treatment for submucous infiltration of the anterior urethral wall and not one of these men had any need to fear later stricture when they were discharged from treatment.

In addition to the list of complications I have given the incidence of lesions which are more properly regarded as accompaniments than complications of urethritis. Mild catarrhal prostatitis, for instance, occurs in practically every case of posterior urethritis; I have only included it in the list of accompaniments, however, when, in addition to pus cells, bacteria were discovered in the prostatic fluid. So also in the case of seminal vesiculitis.

All the patients included in this series were treated in Army practice. The great majority were light horsemen on service in Palestine. Treatment had, of course, to be concluded as quickly as possible, but as the men went back to horse-riding, relapses were more to be feared. Consequently I avoided routine as much as possible and endeavoured to treat each case on its own merits. The patients were followed up later by means of inquiries sent to the regimental medical officers and it was found that no patients had relapsed other than those who actually returned to hospital. The number of the latter was very small, especially when the disadvantageous conditions of mounted service are con-

sidered. During July, 1918, only four patients with relapses were admitted; 75 with gonorrhœa had been discharged in June, 80 in May and 81 in April.

Before tabulating my results in this series, I would like briefly to mention the questions of diagnosis and bacteriology. Subjective symptoms may point clearly to involvement of the posterior portion of the urethra, or all the glasses in the "three glass" test may be cloudy with pus. In the sub-acute and chronic stages, however, the glass tests mean very little; the method suggested by my former chief, Mr. Thomson Walker, of washing the anterior part of the urethra with cold boric lotion until it is cleansed and then examining the urine passed, will be found of great value. The cold lotion stimulates complete closure of the sphincter of the membranous portion of the urethra and so renders the test scientifically accurate.

Bacteriological examination showed that nearly 20% of these cases were non-gonococcal. I shall not enter into a discussion of the bacteriology of these forms of urethritis. Occasionally such cases ran a very mild course, but on the whole were very little less difficult to cure than gonococcal urethritis.

Of this series of 481 patients, 282 had posterior involvement at the time of admission. With the latter group the average time necessary for complete cure was 61 days. The remaining 199 patients were suffering from anterior urethritis only on admission. Of this group only 5.1% later became affected posteriorly. The time necessary for cure in the 188 cases remaining anterior was only 26 days.

Complications.

Peri-urethral abscess	4 cases (0.9%)
Well-marked submucous infiltration	7 cases (1.5%)
Slight submucous infiltration	24 cases (5.0%)
Paraphimosis	2 cases (0.4%)
Peri-urethritis of bulb	1 case (0.2%)
Prostatic abscess	2 cases (0.4%)
Epididymitis developed during treatment	15 cases (3.0%)
Epididymitis present on admission	14 cases (3.0%)
Synovitis of ankle-joint	1 case (0.2%)

Accompaniments.

Infected para-urethral tract	4 cases (0.9%)
Old stricture present	2 cases (0.4%)
Acute prostatitis	17 cases (3.5%)
Mild prostatitis	148 cases (30%)
Acute seminal vesiculitis	2 cases (0.4%)
Mild chronic vesiculitis	23 cases (4.1%)

The conclusions I draw from this study are the following: Under good conditions 95% of cases without posterior involvement at the beginning of treatment may be kept anterior with modern methods. The incidence of serious complications is remarkably low, as is evidenced by the 3% development of epididymitis and the 0.2% metastatic lesions. The low relapse rate under adverse conditions proves the value of putting the patient through the gamut of the various modern tests of cure. I have not detailed these methods here, since space will not permit. Many other important considerations have been omitted or only sketchily gone into in this paper, but I hope that the points brought out and the discussion of results vindicate in some measure the superiority of the modern treatment of urethritis.

Reports of Cases.

RUPTURE OF THE BOWEL BY COMPRESSED AIR.

By W. Allan Hailes, D.S.O., M.B., Ch.B. (Melb.),
F.R.C.S. (Eng.),

Honorary Surgeon to Out-Patients, Melbourne Hospital.

THE following case merits record in view of its rarity. It may also act as a warning to those who are employed in workshops where compressed air is used.

G.D., a boy of sixteen years, was admitted to the Melbourne Hospital on May 20, 1921. At 2 p.m. on that day some of his mates, by way of a "practical joke," had held the end of the conducting pipe of a cylinder of compressed air close to his buttocks and turned on the tap. The boy experienced severe abdominal pain and collapsed, but was not conveyed to hospital till 10 o'clock that night.

On admission he complained of generalized abdominal pain. His temperature was 36.7° C., his pulse beat was 170 and his respiration rate 38 a minute. The pulse was of poor volume. The patient was conscious and mentally alert. His features were disfigured by surgical emphysema, which extended uniformly from the eyebrows and lower portion of the scalp above to Poupart's ligaments below. He had dyspnoea, but his mucous surfaces were more pallid than cyanotic.

Physical examination of his heart and lungs was obscured by the generalized emphysema. On auscultation of the heart the apex beat appeared to be located in the fifth intercostal space in the left nipple line. Though the heart beat was very rapid, the sounds were clear. The abdomen was distended and had the appearance of having been "blown up." It did not move with respiration. The whole anterior abdominal wall was rigid and tender. No abdominal dullness could be detected owing to the emphysema. There was no laceration of the anus.

A diagnosis of rupture of the colon due to the entrance of air through the rectum was made, but the patient's general condition did not permit any operative interference. It was hoped that improvement would allow operation later.

At 9 a.m. the following morning the patient was no better, but it was decided to operate. The pulse was poor in volume and its rate was 170 a minute.

Under local anæsthesia the abdomen was opened below the umbilicus in the hope that the escape of air would relieve the pressure on the diaphragm and that the pelvis could be drained. Immediately following incision of the peritoneum air escaped with blood-stained fluid. The fluid had no faecal odour. The patient stated at once that he felt relief, but shortly after complained of abdominal pain. No attempt was made to locate the perforation, but a tube was passed into the pelvis and the abdomen closed.

The patient's condition did not improve and at 4 p.m. that day (May 21, 1921) he died.

The Autopsy.

A post mortem examination was made by Dr. C. H. Mollison on May 25, 1921.

Dr. Mollison reported that the body was that of a young man, 173 cm. (5 ft. 9 in.) in height. A surgical incision was visible in the lower part of the abdomen. Rigor mortis was still present in the legs, decomposition was commencing in the upper part of the body and the front of the chest was swollen. When the abdomen was opened the large intestine was seen to be markedly hæmorrhagic as far proximally as the ileo-cæcal valve. It had been greatly distended, but was now collapsed. There was a tear about 3.7 cm. long in the large bowel near the hepatic flexure and there were signs of peritonitis in the vicinity on the bowel wall and on the liver. The peritonitis was becoming general. The lower part of the large bowel showed some superficial lacerations of the mucous membrane. There were numerous bubbles in the tissue of the mediastinum, the right lung was completely collapsed and the pleural cavity contained a quantity of bloody fluid.

The heart was normal. A bleb, the size of a walnut, was visible on the anterior surface of the aorta, between it and the pulmonary artery.

The left lung was congested and friable posteriorly.

The liver was rather firm. Its capsule was coated with recent lymph.

The spleen was firm.

The kidneys were rather firm and their capsules were tending to adhere.

The brain did not show any lesion.

Discussion.

I have to thank Mr. F. H. Langlands for his investigation of the literature. Twenty-five cases of undoubted perforation of the colon by compressed air were collected and published by G. Jean, of Toulon, who operated in two instances with success.

In the majority of the reported cases the pathological appearances differed considerably from those of the case which I have reported, in that there was a much greater laceration of the serous and muscular coats of the colon than of the mucosa, which tended to herniate through the tear in the outer coats. The other coats became retracted towards the mesenteric attachment. In each case of the series the tear in the mucosa was single and small, although the lacerations in the outer coats were multiple and as long as 35 cm.

The common site of the laceration is the recto-sigmoidal junction or the sigmoid colon itself, but all parts of the colon and cæcum have suffered and in one case the compressed air passed the ileo-cæcal valve and reached the small intestine, where it produced ecchymosis of the mucosa. The lacerations were always along one of the longitudinal bands, although in experiments on the cadaver the laceration is usually situated on the mesenteric edge.

There is no mention in the literature of the occurrence of pneumothorax and in the majority of the cases the emphysema was limited to the inguinal region, but in one instance reached the neck. In no instance was the emphysema generalized as in this case.

In none of the reported cases had the tube been introduced into the rectum or even placed in direct contact with the skin. The clothing was not damaged, nor was the anal region lacerated. Some of the cases had been the results of practical jokes as in the instance now reported. In others the pipe conveying the compressed air had blown out as it passed beneath the workman and the released air appears to have been conducted by a funnel action, as it were, of the perineal region to the anus, the sphincter of which was easily overcome.

The symptoms in all cases were similar, but showed varying degrees of severity. Those patients on whom operations were successfully performed, were admitted to hospital within three hours of injury and the pulse rate ranged between 100 and 120 per minute.

In view of the extensive injury to the bowel wall the operation performed in the majority of instances was division of the bowel at the site of injury, closure of the lower segment and colostomy. Simple suture was possible in one case and enterectomy with anastomosis was successfully performed in one case. A small incision in the abdominal cavity, to relieve the air pressure on the diaphragm, was part of the early treatment in some cases, but this procedure should apparently not be carried out too soon, since one observer reports that it was followed by cardiac failure. Of the twenty-five cases in which the diagnosis was established either at operation or at autopsy, operation was not performed in nine, since the condition of the patient did not permit interference. These nine patients died. Of the sixteen patients subjected to operation, nine died and seven survived. The majority of the survivors had a permanent colostomy opening.

References.

The literature quoted by Jean is as follows. It includes every case reported in Europe and America. The accident is therefore very uncommon.

(1) Andrews: "Rupture of the Bowel by Air," *Surgery, Gynecology and Obstetrics*, 1911, Volume XII., page 63.

(2) Cotton: "Rupture of the Bowel by Air," *Boston Medical and Surgical Journal*, April, 1912.

(3) Bendixen and Blything: "Rupture of the Bowel by Air," *Surgery, Gynecology and Obstetrics*, 1914, Volume XVIII., page 73.

(4) Buchbinder: "Rupture of the Bowel by Air," *Journal of the American Medical Association*, February 19, 1921.

EXTREME ASCITES.

By I. C. Hains, M.B., B.S. (Adelaide),
Bundaberg, Queensland.

THE following case may be of interest:

Mrs. G., aged 40 years, consulted me nine months ago. She was a woman 163 cm. (5 ft. 6 in.) in height. She had borne ten living and two dead children. She told me that she was suffering from a bad heart, which had only troubled her since the birth of her last child three years previously.

On examination I found that the pulse was rapid and irregular and the heart badly fluttering. There was œdema of the legs and the abdomen was distended with ascitic fluid, consequent on the inefficient state of the heart.

After first tapping the abdomen, I treated her by Sir James Mackenzie's method, with large doses of digitalis, bringing the heart beat down to 84 per minute; it has not been less than this rate since.

Subsequently, four months ago, I again tapped her. The amount of fluid was not great and I kept no record.

Six days ago I again saw this patient. She complained of great heaviness in the abdomen, which was enormously distended. She was prevented from walking about by the weight in the abdomen.

I did a paracentesis again and removed 30 litres (27 quarts) of fluid. The measurement was very accurate and was made by a reliable trained nurse with a three-pint measure, which was filled to the brim eighteen times and which I have had tested as to its capacity. The weight of the fluid was at least 30.8 kilograms (68 lb.), taking the specific gravity at approximately 1.010 to 1.015 (Osler's "Text-Book of Medicine").

The patient is greatly relieved and bright. A certain amount of fluid has again collected and drained away. She is on large doses of digitalis and I expect her about in a few days.

Dr. Lawes recently published a case headed "A Broth of a Boy." This might well be entitled "Broth in the Abdomen" and no doubt is somewhat of a record. I can swear to the accuracy of the measurements.

Reviews.

CARDIOLOGY.

CARDIOLOGISTS, along with other specialists, are often accused, and frequently unjustly so, of taking too narrow a view of their particular branch of medicine. They have also been criticized for believing that cardiology of to-day is essentially a modern product, dating back a few decades only, particular importance being attached to the work of the moderns, especially Mackenzie and Lewis.

To those interested we can heartily recommend a little book by Dr. H. L. Flint,¹ which gives an excellent summarized survey from the early Sumerian records of 4,000 B.C. up to the present year. A preface is supplied by Sir Clifford Allbutt. References are given as marginal notes—a handy innovation, more easy of access than the usual bibliography at the end of each chapter.

It must be admitted that the greater part of our present-day knowledge is of comparatively recent origin. If we except Harvey, the discoverer of the circulation (1625), Auenbrugger (1722-1809), who first described percussion which was developed by Corvisart (1755-1825), we step down to 1819, when Laennec invented the stethoscope, now two years after the centenary.

Practitioners then demanded graphic methods of recording and analysing the complex character of the contractions of the heart's chambers. This was supplied by Ludwig in 1847, who invented the kymograph, and by Hürthle's manometer as late as 1891. Piper (1912) has improved on this, making use of a small reflecting mirror

¹ "The Heart: Old and New Views," by H. L. Flint, M.D.; 1921. London: H. K. Lewis & Company, Limited; Royal 8vo., pp. 177, with 66 illustrations.

attached to a rubber membrane. The excursions of the transmitted beam of light are recorded photographically. Clinical methods for blood pressure readings particularly concern C. J. Martin's modification of the Riva Rocci apparatus in 1905. In the same year Korotkow described the auditory method. This has been reviewed by McWilliams and others in 1914 and affords the easiest method of obtaining a diastolic reading.

The author has no hesitation in ranking Sir James Mackenzie along with the old masters, nor would it be rash to include Sir Thomas Lewis in the same category. The author describes a new polygraph box and a wrist splint for rendering the radial artery more prominent. He also refers to a slide rule for reading polygraphic tracings. He mentions Wardrop Griffith's method of measuring the *a-c* interval, which he represents as the distance measured from the summit of the "*a*" wave to the beginning of the radial up-stroke.

A good series of cardiograms is illustrated and the development of the instrument by Einthoven (1901) and other workers is traced.

Many analogies exist to explain the heart and the author gives a new one: "The heart can be compared to the engine of a motor supply van; it keeps going so long as it is supplied with its source of energy, *i.e.*, petrol (blood), but is controlled by the driver (nervous system) according to the need of the population (tissues of the body)."

At the end of the book are short chapters, or rather short notes, dealing with the systolic murmur and the principles of treatment. From war experience it is stated that the systolic murmur, either apical or basal, in the absence of other signs of organic disease, can be disregarded. "... if there is a systolic murmur and no physical sign of heart disease, the murmur is ignored and, on the other hand, if there is a systolic murmur and some physical sign of heart disease, such as cardiac enlargement, then the diagnosis of organic disease is based on the enlargement of the heart and the systolic murmur is ignored." ... "The old school holds that valve disease produces heart failure by the additional load and internal stresses thrown on to the heart muscle. The new school holds that valve disease is a certain proof of a diseased myocardium and it is the infection or malnutrition of the heart muscle which causes the final breakdown." ... "It is not the valve lesion, but the damage done to the heart muscle which reduces the reserve force or produces heart failure."

Purring thrills with systolic bruits and diastolic bruits are of much more significance than systolic murmurs.

The book evidently was completed too soon to include notice of the "circus" movement theory of auricular flutter and fibrillation recently elaborated by Lewis and his co-workers.

Flint's book is a handy little volume for reference and will well repay perusal for its outline of modern cardiology as contrasted with the old.

ANXIETY HYSTERIA.

A BOOKLET written conjointly by Dr. C. H. L. Rixon and Dr. D. Matthew¹ gives a short, straight-forward account of anxiety hysteria—also known as the anxiety neurosis—designedly intelligible to those who have not specially studied the psycho-neuroses.

The work opens with a chapter on normal psychology, elementary, easily read and useful, though relatively long. Next symptoms and diagnosis are indicated, perhaps too briefly. Then comes a practical chapter on treatment; then some final remarks on conversion symptoms.

The authors' experience of anxiety hysteria is derived from the war and they mention in the matter of treatment that there are two schools of physicians, one of which advocates "forgetting," the other "remembering." The wiser school counsels the patient to "think and remember," since to forget is impossible. The patient is exhibiting a group of symptoms consequent upon terrifying experiences,

repressing unbearable memories, as well as the emotions which these memories evoke. In fact, he is suffering from a process of "bottling up," the cure of which lies in the task, not always simple, of extracting the cork. The writers favour "free association," the employment of simple but forceful explanations and illustrations to prove to the patient that his disorder is understood and to induce him to unburden his mind of those painful memories. The same principles of treatment apply to "conversion symptoms," *i.e.*, hysteria of the physical kind, paralysis, contractures, mutism, etc., which are inseparably interwoven with anxiety hysteria.

We can confirm the forewords of Colonel Sir A. Lisle Webb, D.G.M.S., Ministry of Pensions, that the book skilfully avoids the arid wastes of controversy on psycho-analysis and provides an account and explanation of anxiety hysteria as lucid as it is simple.

POST-GRADUATE COURSE IN SYDNEY.

In our issue of last week we published the programme of the post-graduate course which has been arranged by the Sydney University Extension Board for January, 1922. We are informed that this programme contains an error. DR. GEORGE E. RENNIE will lecture on the significance of the reflexes in the diagnosis of diseases of the nervous system at 2 p.m. on January 10, 1922, at the Royal Prince Alfred Hospital. He will not deliver a lecture on January 9, 1922.

CENTENARY OF THE PHILOSOPHICAL SOCIETY OF AUSTRALASIA.

THE ROYAL SOCIETY OF NEW SOUTH WALES will celebrate the centenary of the first scientific society in Australia, the Philosophical Society of Australasia, by holding a special meeting during the course of the present week at the Royal Society's House and by holding a function at Kurnell on the afternoon of December 10, 1921. The Philosophical Society of Australasia was founded by Sir Thomas Brisbane in December, 1821. It was the forerunner of the Royal Society of New South Wales. Dr. Henry Grattan Douglass was the first Treasurer and Secretary. The President and members of this Society erected at Kurnell a tablet in memory of the landing of James Cook and Joseph Banks.

Addresses on astronomy, anthropology, botany and geology will be delivered by prominent authorities in the several branches of science at the meeting and some historical sketches will be given by Mr. R. H. Cambage. At the function at Kurnell Sir William Cullen, the Honourable Sir Joseph Carruthers, his Honour Judge Docker, the Honourable J. F. Lane Mullins and Mr. Alex. Hay will speak.

THE ALVARENGA PRIZE.

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA announces that the next award of the Alvarenga Prize will be made on July 14, 1922, provided that an essay deemed by the committee of award to be worthy of the Prize shall have been offered. The value of the Prize is about \$300.

Essays intended for competition may be on any subject in medicine. Previous publication is not permitted. The essays must be typewritten and, if in a language other than English, must be accompanied by an English translation. Each essay is to be submitted without signature and is to bear a motto. A sealed envelope should be sent, accompanying the essay, marked on the outside with the motto of the essay and containing within the name and address of the author. The essay must be in the hands of Dr. JOHN H. GIRVIN, the Secretary of the College of Physicians, 19, South Twenty-Second Street, Philadelphia, Pennsylvania, United States of America, on or before May 1, 1922.

The Alvarenga Prize for 1921 was awarded to DR. JOHN W. CHURCHMAN, of New York City, for his essay, entitled "Selective Bacteriostasis of Gentian Violet."

¹ "Anxiety Hysteria: Modern Views on Some Neuroses" by C. H. L. Rixon, M.D., M.R.C.S., and D. Matthew, M.C., M.B., Ch.B., with a Foreword by Colonel Sir A. Lisle Webb, K.B.E.; C.B., C.M.G.; 1920 London: H. K. Lewis & Company, Limited; Crown 8vo., pp. 124, with eight illustrations. Price: 4s. 6d. net.

The Medical Journal of Australia

SATURDAY, DECEMBER 10, 1921.

A Lesson in Medico-Politics.

ON October 11, 1921, the Insurance Acts Committee of the British Medical Association sent a deputation to wait upon the Minister of Health for the purpose of discussing the proposed reduction of the capitation fee payable to panel doctors under the *National Health Insurance Act*. The protocol of this interview is published in the *British Medical Journal* (Supplement) of October 15, 1921. From this record it will be gathered that the Minister of Health intimated that the financial difficulties of the Government rendered it essential to exercise economy in all governmental expenditure. When national health insurance was introduced in 1911, the fee paid for attendance on each insured person was fixed at 7s. 3d.. Since then the remuneration has been modified on several occasions and it has recently been increased to 11s. per person. The Minister appealed to the patriotism of the doctors and made them an offer of 9s. 6d. in order to help the Government out of part of its difficulties. He explained that the sacrifice was not as great as it might seem to be, in view of the recent fall in the cost of living. While he extended one hand imploringly to a profession which has in the past allowed itself to be exploited and used as no other body of citizens has ever done, he indicated with the other hand that if his offer were not accepted, the profession might find itself in a less favourable position. He intimated that the doctors might have to bargain as in the days of old with the friendly societies or that they might be left to collect such fees as they could from the poorer section of the public or finally that they might be forced in the long run to accept the revised terms of the Government, terms that might be less favourable than those now offered.

The reply of the panel doctors will be awaited

with great interest by the medical profession throughout the Empire. A conference is held every year of the local medical and panel committees and it was to this year's conference that the question was referred. Whatever may have been the decision of the panel doctors and whatever may be the outcome of any further negotiations with the Government rendered necessary by this decision, this action of the Minister of Health is a reflection of what the medical profession in Australia may expect if national health insurance or a national medical service is introduced. In order to arrive at a clear conception of the position, it is necessary to marshal the facts quite frankly and to weigh with circumspection the claims made by the three parties to the undertaking.

The Government is responsible for the payment of the capitation fees to medical practitioners on the panels. Medical benefit costing 11s. per insured person *per annum* has to be met out of the funds provided by the Government, the employer and the employed. The medical profession is not concerned with the question of sickness benefit, funeral benefit and the other obligations of the Act. The cost of administration must be added to the 2.54d. per week, so that it may be assumed that the three parties to the undertaking have to provide 1d. each per week to insure the payment of 11s. each year to the panel doctor. For England and Wales this means an annual expenditure on the part of the Government of £2,697,500. By reducing the fee to 9s. 6d. an economy of £933,750 *per annum* would be effected. That close on one million pounds sterling is a substantial sum, as the Minister expresses it, will not be denied. The question arises whether the circumstances justify this saving at the expense of the medical profession, when a high grade of efficiency is required of the panel doctors and when the services rendered are of an arduous and responsible nature. Moreover, consideration must be had for the fact that the medical profession contributes in this way to the well being of the citizens and consequently to their ability to remain productive members of the community. If the profession were asked to accept a reduced remuneration for medical attendance on the necessitous section of the people, the appeal to

charity would be justified. The Minister and Dr. Brackenbury both spoke of the appeal being made on patriotic grounds. It is a little difficult to understand exactly how this claim can be substantiated.

The second party to the undertaking is the insured person, namely, the worker. Wages before the war were low; now they are high. Before the war the contribution was 2s. 5d. per person; now it is 3s. 8d.; if the Government proposal be carried into effect it will be 3s. 2d.. Surely the enhanced wages justified the increase of 1s. 3d.. Is there any reason why the financial stringency should be the means of reducing the medical benefit contribution by sixpence a year for the worker whose wages are still high? Moreover, the individual is receiving for this small sum on an average 3.5 attendances, so that he actually pays less than 1s. 3d. per attendance to his doctor.

In the last place there is the panel doctor. It is calculated that the panel doctor gives 3.5 attendances to each insured person. In other words, he receives 3s. 1½d. for each attendance at the present rate. His remuneration would be reduced to 2s. 8½d. if the reduction were adopted. In order to earn £1,000 a year, the panel doctor would have to take a list with 1,828 names and to give twenty attendances every week day and three on Sundays. Everyone will admit that this represents a good day's work, provided that efficiency is maintained and that the practitioner may have reasonable leisure for reading and study. It would seem that in the present circumstances the capitation rate is by no means high and that if it were reduced, the practitioner would be compelled to limit his lists in order to make an adequate living.

National insurance is probably the best agent yet devised for combating pauperism where it exists on a large scale. In the absence of wide-spread destitution and poverty, its admitted defects and disadvantages render it unsuited as an expedient for the provision of medical service for the working class. The negotiations with the Minister of Health teach two grave lessons to the medical profession in Australia. In the first place, governments do not hesitate to use coercion when they are dealing with a single section of the community. In the second place, when the cost of the service is borne in part

by a government, there is a far greater force behind the proposal to reduce the capitation fees than when the cost is borne by the individual benefiting from the arrangement or by a society to which he contributes for this purpose. The most equitable and suitable provision of medical attendance at contract rates on persons of limited means is that embodied in agreements made between friendly society lodges and the medical profession.

THE TUBERCULOSIS QUESTION.

At the second conference of the International Union Against Tuberculosis, held in July last in London, Sir George Newman pointed out that it was a great fallacy to believe that such a protean disease as tuberculosis could be conquered by any single method. Pulmonary tuberculosis is a more urgent and serious problem in the United Kingdom than in Australia, but its disasters in the Commonwealth are sufficiently numerous to warrant the application of every measure and the enlistment of every agency that might contribute to a sensible reduction in the mortality. Sir George Newman referred with gratification to the fact that the mortality from this disease had been reduced by 74% during the course of 73 years. In 1920 the rate in the United Kingdom was 842 for each million inhabitants. In 1920 the rate was 616 for each million inhabitants in Australia. In the past the factors which have contributed to the greatest extent in the reduction of the incidence and mortality, are improved sanitation and a realization by the people of the dangers of the disease. There can be small doubt concerning the value of the scheme propounded by Sir Robert Philip, of Edinburgh, in effecting a reduction of infections. The Edinburgh scheme depends on the simultaneous control of the infected portion of the population according to the nature and stage of the infection. Sir George Newman rightly attributed to the *National Insurance Act* of 1911 a beneficial influence in this regard. Under the provisions of this enactment, tuberculosis dispensaries with well-trained tuberculosis medical officers in charge were instituted and much extended accommodation was created for the institutional or sanatorium treatment of consumptives. Among the

other measures which have contributed to the reduction in the incidence and mortality, Sir George Newman mentioned the improvement of the housing of the poor, the factory legislation, the better control of infant and child life, the restrictions in regard to the sale of alcohol and the control of the food supply. He was sanguine in discussing the prospect of the discovery of an effective means of immunizing against the disease and spoke in optimistic terms of the ultimate victory over this disease by the combined efforts of the sociologist, the hygienist and the immunologist.

The prophylaxis of tuberculosis is not as yet developed sufficiently to enable anyone to speak with confidence and conviction. The nature of the infection militates against the application of direct or simple means. Unfortunately, the tubercle bacillus is too wide-spread to be capable of being reached. The fact that in Europe, at all events, almost every individual is infected before the age of puberty and probably in very early life renders the task of seeking the "previous case" a hopeless one. Experience has taught that prolonged contact is usually needed before a person falls a victim of the disease, even when a secondary infection is grafted on to an infection acquired in infancy. No one nowadays accepts the idea of infection from chance proximity with supposedly infected objects or houses. To exclude the ingestion or inhalation of bacilli either from infected cattle or from infected human beings does not seem to be within human power. It is true that by the prohibition of spitting, by the control of persons with manifest so-called open lesions and by transferring susceptible persons to sparsely populated, healthy districts, much can be accomplished, but the enormous incidence of the disease renders it very difficult to attack more than a small fraction of the infected community. It is stated that the Grancher system has been highly effective in preventing the onset of manifest tuberculosis in children who are found in a tuberculous environment. This system has been in operation in Paris for upwards of seventeen years under the name "*Œuvre Grancher*." It was found that many children yielded a von Pirquet reaction without revealing any clinical symptoms of infection. Such a child, belonging to a family one or more members of which

were suffering from tuberculosis, was removed to a healthy rural home, provided that it was found to be free from adenoid vegetation. The child was vaccinated before the removal. It is stated that only seven children out of a total of 2,300 developed tuberculosis; two died of meningitis within three weeks of the removal. It will be noted that the application of the system is contingent on certain conditions. It cannot for this reason be regarded as a measure of more than contributory importance in the prophylaxis. But by adding this scheme to all the other measures which have been found to be of use, the ultimate goal is brought a little nearer. It is wise, however, for hygienists and others interested in this difficult problem to guard against undue optimism by remembering that over 3,000 persons still die each year of pulmonary tuberculosis in the Commonwealth.

RED BLOOD CELLS IN DISEASE.

It is not often recognized that the evidence on which the diagnosis of a primary anæmia is based, may be of the weakest nature and that it may be impossible to differentiate between some of the forms of anæmia on clinical and the usual hæmatological signs alone. Anæmia means a diminution of the blood. An attempt has been made to distinguish between a diminution of the volume of fluid circulating in the blood vessels, spoken of as oligæmia, a diminution of the number of red blood corpuscles, spoken of as oligocythæmia, and a diminution of the amount of hæmoglobin contained in the total mass of blood corpuscles, spoken of as oligochromæmia. The measurement of the total volume of blood is difficult to apply in clinical practice. Lorrain-Smith and Haldane endeavoured some twenty years ago to utilize the carbon dioxide method, but few physicians are prepared to carry this out on their patients. The older proposals are too unreliable in their results. Recently a few novel methods have been introduced, but they appear to be either complicated or unreliable. The importance of this must be borne in mind if an attempt is to be made to judge abnormalities of the blood with accuracy. Admitting for a moment that the counting of the number of red blood corpuscles in each millimetre of blood and the estimation of the quantity of hæmoglobin in the mass of red blood corpuscles are carried out with relative accuracy, it will be seen that, unless the quantity of blood can be ascertained, it may be impossible to determine the significance of the findings. It is quite possible to have the volume of blood doubled, while the number of red blood cells is diminished by 50% and the hæmoglobin percentage reduced to a corresponding extent. In these circumstances the individual would have a normal number of circulating red blood cor-

puscles containing a normal amount of hæmoglobin. Similarly, an intense oligocythæmia can exist when there are 5,000,000 red cells in each cubic millimetre, provided that the quantity of fluid is reduced. Unfortunately, the counting of the erythrocytes is not uncommonly carried out in a manner calculated to convey an entirely wrong impression. Care must be taken in suspending the blood in the diluent solution; a large number of cells must be counted in order to reduce the experimental error to a minimum. Again, it has been shown that the distribution of erythrocytes throughout the body is not equal and that the concentration is readily disturbed by incautions manipulations. If there be a doubt concerning the reliability of the count, it is advisable to repeat it three or four times, the blood being drawn from a different region of the body each time. Some strange surprises await the hæmatologist who controls his results by collecting samples of blood from a vein and from an artery by means of a fine needle attached to a hypodermic syringe. Even greater errors are made in the determination of the hæmoglobin percentage. Colorimetric analysis demands much skill, practice and acuity of colour vision. A considerable error in the count of erythrocytes and a second error in the hæmoglobin estimation will mislead the physician in his diagnosis.

To these measurements has been added in recent times the estimation of the average volume of the individual erythrocyte. Viscosity determinations are by no means reliable and, if employed, should always be checked by the refractometric method of Bence. Much information can be gleaned from the determination of the size of the erythrocytes, but this information should be examined critically, in order that false deductions are not drawn. Professor H. Kämmerer and Dr. L. Geisenhofer have recently endeavoured to determine the volume of the red blood corpuscles in the blood of persons suffering from pulmonary tuberculosis and to discover the significance of their findings.¹ They recorded at the same time the red blood corpuscle count, the hæmoglobin percentage and the plasma albumin content. The normal volume of an erythrocyte is given by Nägeli as 87 cubic micromillimetres; more recent estimations place it at 92.2. In advanced cases of tuberculosis the volume is reduced to between $45\mu^3$ and $55\mu^3$. This reduction was not found in all severe infections, nor was the volume always in the region of the normal in mild and early infections. In many severe cases the volume was diminished, while the patient was pale, yet the number of red blood corpuscles was raised and the hæmoglobin percentage scarcely below normal. In some of these cases the plasma protein was more abundant than normal. Unfortunately the total volume of blood was not determined. The authors realize that if the total quantity of fluid were reduced, the existence of a severe anæmia would be cloaked by a normal erythrocyte count and a normal hæmoglobin estimation. They put forward as possible explanations an experimental error caused by an increased number of erythrocytes and an alleged disturbance of the

osmotic tension of the plasma. The fallacy of both these assumptions is apparent. They are consequently given to the conclusion that the reduction in the volume of the erythrocytes is caused by a damage of the erythropoietic organs, namely, the bone marrow. They are disposed to assume a reduction of the fluid elements of the blood in those cases in which the cell volume is diminished and the number of red blood corpuscles per unit of blood increased. In the absence of histological evidence of involvement of the bone marrow, this explanation must remain a hypothesis, however plausible and probable. They offer a further hypothetical explanation which should be capable of proof. They postulate a marked reduction of the respiratory surface as a result of the tuberculous process. If the bone marrow is not performing its function properly, there would be a reduction of the total quantity of erythrocytes and consequently an increased carbon dioxide content of the blood. The carbon dioxide would stimulate the bone marrow to produce more erythrocytes to compensate the diminished respiratory surface. The polycythæmia would represent an increased number of red corpuscles of markedly reduced size. The actual surface of the larger number of small erythrocytes might be much less than that of a normal number of normal sized erythrocytes. While the possibility of this process cannot be denied, it contains too many assumptions to justify its blind acceptance. We are therefore brought back to a recognition of the need of some reliable method of estimating the total quantity of blood for clinical purposes. It must be admitted that the determination of the volume of red blood cells is an important advance, but it does not suffice to disclose the actual chemical and physical changes in anæmia.

PNEUMATIC RUPTURE OF THE BOWEL.

IN this issue we publish a report by Dr. W. A. Hailes of a case of rupture of the large intestine by compressed air. It will be remembered that reports of the tragic occurrence concerned with this case appeared a few months ago in the lay press. The case is of interest because of its rarity. It is probably the only one of that nature yet reported in Australia. We understand that a similar case occurred in Sydney a few years ago, but was not reported. Inquiries are being made and we hope to publish the details at a later date.

Up to January, 1911, only sixteen cases (of which thirteen were fatal) had been reported. In January, 1914, Bendixen and Blything collected records of seven other cases. Dr. Hailes, who has had access to Jean's paper, tells us that twenty-five authenticated cases of the accident have been reported. Only recently Dr. J. R. Buchbinder¹ described a fatal case. Dr. Buchbinder's patient was the victim of a "practical joke." The man was stooping at his work when a fellow workman placed the nozzle of a hose delivering air at a pressure of 39 kilograms close to his rectum. The internal diameter of the nozzle

¹ *Münchener Medizinische Wochenschrift*, July 8, 1921.

¹ *Journal of the American Medical Association*, February 19, 1921.

was 3.6 cm.. The patient experienced agonizing pain and was carried to hospital in a state of collapse. He was pulseless and his respirations were so small as to be scarcely noticeable. His abdomen was blown up with air and had the hardness and tenseness of a well inflated rubber tyre. Surgical emphysema was noticed over the chest, abdomen, penis, scrotum and perineum. The emphysema, extensive as it was, did not have the extraordinary generalization which characterized Dr. Hailes's case. Until subjected to operation, the patient was seized with violent clonic spasms of the body. Procaine was used as a local anæsthetic and a small incision over the left *rectus abdominis* muscle was made. When the peritoneum was opened, the air rushed out with a loud report and the anterior abdominal wall fell in. A tear was discovered on the convex surface of the sigmoid colon. The air had apparently broken through the mucosa and then stripped up the serous lining for a distance of about 18 cm.. The colon was collapsed and almost empty. Small petechiæ were scattered over the surface of the mesentery of the sigmoid. Dr. Buchbinder closed the tear in the sigmoid, made a colostomy opening in a loop of the descending colon and closed the peritoneum. The patient died four hours later. The mortality of the accident is enormous, 72% of the patients dying. From the statistics quoted by Dr. Hailes it is apparent that patients have a better chance of recovery when subjected to operation.

A remarkable feature of Dr. Hailes's case was the site at which perforation took place. Apparently the stream of air met with no marked resistance or encountered no weak segment of the bowel till it had passed almost completely along the course of the large intestine. The rupture took place at the hepatic flexure. In only one recorded case did it actually break down the resistance of the ileo-caecal valve and reach the small intestine. The sigmoid colon is the common site of injury. It is in this region that the onward moving column of air meets with resistance, since the bowel is here looped to join with the rectum below and the descending colon above. The rectum consistently escapes. An explanation of this is perhaps to be found in the ballooning of the rectum as compared with the lumen of the remainder of the bowel, and in the support given to its walls by the bladder and the walls of the bony pelvis.

The case described by Dr. Hailes is also remarkable for the extent of the emphysema and for the occurrence of pneumo-thorax with collapse of the right lung. Dr. Hailes has made no attempt to explain the anatomical course of the air which produced these complications. The problem is a difficult one and would merit a paper itself. It is of interest to the anatomist more than to the surgeon.

CHILDREN'S FEARS.

DR. FRANCES RUSS-BARKER, a student of child life and a promoter of infant welfare, has recently made an eloquent appeal for greater attention by medical

men to the psychology of the child.¹ She points out that, whereas the effect of mental troubles on the origin and course of illness in adults is well recognized, it is forgotten or neglected in the case of children. Just as medical treatment alone will not cure the insomnia of a bank clerk who has been robbing a till, so also will it fail to heal the injured nervous system of a child subjected to "psychical trauma." The author agrees with the experience of George Eliot, who said of the emotional sufferings of early childhood that they were very great indeed, that they were intensified by being neglected or ignored, that they affected our health as much as our happiness and that we bear their traces still. She refers in particular to two points. One is the frequent outrage committed on a child's sense of justice. The young boy or girl has a keen appreciation of the respective values of virtue and iniquity. Wrongful accusations disturb the balance of the little mind in a serious way. The child who goes to bed brooding upon his wrongs, carries hidden in his breast a smouldering resentment or hatred which darkens his life and may lastingly disturb his health. A child equally with an adult can become introspective, sullen and suspicious when he finds that his thoughts and actions are misunderstood. The second point is the frequent pandering by parents to the natural emotion of fear. Too often the child's fears are met with harshness or ridicule instead of kindness, sympathy and explanation. To use the language of the author, the child is mentally and morally murdered. In his place appears a little man who will grow up with all the stigmata of the neurotic in his mental make-up.

Dr. Russ-Barker's words may seem a little exaggerated to those who have long since forgotten the experiences of their own childhood. Who of us is there who, as he travels farther from the east, does not feel the memories of childish emotions slipping from him? It is so tiring, said an English author, to stoop to the child, so much easier to lift the child up to you. Many of the fables and fairy tales told for the supposed pleasure of the child wound his nervous system in proportion as they fire his imagination. Adults are blind to the warnings of a child's tell-tale face. The opinions of Elia on this subject, who considered it an act of charity to keep the candle burning while the child slept through the early hours of the night, will meet with the sympathy, if not the entire approval, of those who understand the reality of a child's night fears. Prophylaxis is better than cure. The imagination of a baby needs the same meticulous care which is devoted to his feeding and his physical health. Many a little fellow has been made a nervous wreck by tales of the "Jack the Giant Killer" type related by a fond father. Stories of hobgoblins, dragons and the like raise up fiends of terrible reality when the child is alone and the lights are extinguished. It should not be forgotten that the same imagination which can turn pumpkins into coaches and mice into horses, finds no difficulty in fashioning a witch from a bed-post or a ghost from a sheet.

¹ *New York Medical Journal*, August 17, 1921.

Abstracts from Current Medical Literature.

PATHOLOGY.

(249) Influence of Thyroid Products on the Production of Myocardial Necrosis.

ERNEST W. GOODPASTURE (*Journal of Experimental Medicine*, October 1, 1921) has made a study of the demonstrable effects of large doses of dried thyroid gland and of thyroxin upon the myocardium of rabbits. He showed that rabbits receiving daily 1 gm. of thyroid gland or 1 mgm. of crystalline thyroxin intravenously every second day exhibit a marked increase in pulse rate, more forceful action of the heart, loss in body weight, increasing irritability and frequently diarrhoea and falling out of the hair. Animals subjected to this treatment alone and killed at periods of two to three weeks, may show relatively slight though definite lesions in the myocardium, notably peri-vascular necrosis or fibrosis in the wall of the right ventricle, focal necrosis or fibrosis in the papillary muscles of the left ventricle and, more rarely, scattered small focal necroses within the myocardium elsewhere. A second series of experiments, performed to test the susceptibility of the myocardium of similarly treated animals to injury by chloroform, yielded more striking results; that is to say, rabbits subjected to the feeding of 1 gm. of desiccated thyroid gland daily or receiving 1 mgm. of crystalline thyroxin every second day until their pulse rate reaches about 300 a minute, show in the majority of instances, following subjection once or twice to light anaesthesia from inhalation of chloroform vapour for one hour, a wide-spread necrosis of myocardium, sufficient in one instance to cause severe disturbances of cardiac function. These results seem to support the view that a heart stimulated to abnormal activity by products of the thyroid gland, may be more readily injured than the normal heart and they suggest a possible explanation for the severer degrees of cardiac disease in association with hyperthyroidism. One may well imagine that in the early stages of hyperthyroidism, when the heart is over-stimulated by products of the diseased thyroid gland, acute infections or intoxications which would leave no significant impress on the normal person, may be permanently injurious to the heart thus affected and with repetition of the injury the cardiac condition may become progressively worse. The evidence does not indicate that products of the thyroid gland alone could be entirely responsible for the cardiac lesions which may occasionally occur in man in association with hyperthyroidism. The experiments indicate very distinctly that chloroform as an anaesthetic in cases of hyperthyroidism is apt to be exceptionally detrimental to the myocardium and it should therefore be avoided whenever possible.

(250) Experimental Rickets in Rats.

H. C. SHERMAN AND A. M. PAPPENHEIMER (*Journal of Experimental Medicine*, August 1, 1921), using a simple diet, consisting of patent flour 95%, calcium lactate 3% and sodium chloride 2%, regularly induced rickets in young rats. The substitution of 0.4% secondary potassium phosphate for a small part of the calcium lactate in this diet completely inhibited the development of rickets. Quantitative determinations of calcium in the bodies of other rats similarly fed showed a marked increase of calcium content in the rats receiving the added phosphate over those which developed rickets. The definite protective action of the potassium phosphate, when substituted for a part of the calcium lactate, is not as yet to be explained and the authors carefully avoid the conclusion that rickets in these cases is due necessarily to a deficiency of potassium or of phosphorus. The quantitative relation of the inorganic ions, rather than an absolute deficiency of any one of them, may be a determining factor and it may well be that under certain conditions of diet in which there is an unbalanced quantitative relationship of the organic as well as the inorganic foodstuffs, rickets may develop. The experiments seem to demonstrate that rickets may be induced or prevented without change in either the protein or vitamin components of the diet. The presence of an adequate amount of calcium also in itself does not afford protection against the disease. These facts appear to be firmly established by the experiments and lead the authors to question the importance attributed by some writers to the deficiency of fat-soluble A and calcium in the production of rickets.

(251) Haemolytic Influenza Bacilli.

T. M. RIVERS AND ERIDA L. LEUSCHNER (*Johns Hopkins Hospital Bulletin*, April, 1921) have investigated the haemoglobinophilic properties of influenza bacilli obtained from throat swabbings in influenza patients. They are of the opinion that on account of the meagre description given to the original *Bacillus influenzae*, especially concerning haemolysis, it seems best to regard both haemolytic and non-haemolytic aerobic, non-motile, Gram-negative, haemoglobinophilic bacilli as influenza bacilli. After all, it matters little what any of these bacilli, non-haemolytic or haemolytic, are called, so long as it is recognized that they belong to the same big group. An interesting observation was made during the course of the work. One of the thirteen strains isolated, after cultivation for seven months on artificial media, lost completely its ability to haemolyse blood, both on solid and in liquid media, while retaining all of its other cultural characteristics unchanged. This organism has always been an influenza bacillus. Once it had many cultural characteristics, one of which was the ability to haemolyse red blood cells. Now it is the same bacillus, but it has lost one of its many cultural characteristics, viz., its power to produce haemolysis.

(252) Thyroidectomy and Parathyroidectomy with Relation to the Development of Immune Substances.

ENRIQUE E. ECKER AND HARRY GOLDBLATT (*Journal of Experimental Medicine*, September 1, 1921) have found that after thyroidectomy with partial parathyroidectomy the maximum and average haemolytic titres of the sera of rabbits injected intravenously with sheep's blood, are equal to or higher than those of normal animals similarly injected. Thyroidectomy with partial parathyroidectomy does not inhibit antibody production. It does not cause disturbance in the rabbit. If the operation is performed properly, the animals survive and only moderate cachexia develops in time. After complete thyro-parathyroidectomy a small proportion of the animals survive, even after developing very severe tetany. Those that recover do not show further signs of serious disturbance, but in time develop a moderate degree of cachexia no greater than that of the thyroidectomized animals. Rabbits subjected to thyro-parathyroidectomy develop anti-sheep haemolysin of a uniformly low titre—on an average one-fifth that of the controls. Injection of bovine blood into rabbits which survived complete thyro-parathyroidectomy performed from one to two months previously, results in the production of haemolysin of a uniformly low titre compared with that of normal animals similarly treated.

(253) Wassermann Reaction in Malaria.

J. PRATT JOHNSON (*Journal of Pathology and Bacteriology*, April, 1921) states that the conflicting opinions published in regard to the Wassermann reaction in malaria may arise from the variable conditions under which the Wassermann test is carried out. He emphasizes the need for standardization and the practice of re-testing in all cases in which one response to the test is obtained, unless the case is clinically one of syphilis. It does not appear unreasonable to assume that the small number of cases in the author's series of 75 patients in which the Wassermann reaction was obtained on re-testing (7%) were cases of latent syphilis. These investigations indicate that the blood in active benign tertian, malignant sub-tertian and mixed benign tertian and malignant tertian forms of malaria does not yield the Wassermann reaction. Definite reactions are due to syphilitic infection or to certain causes connected with the technique employed or to non-specific changes in the patient's serum as yet not completely understood. In such cases the serum should be invariably re-tested. A reaction confirmed by a subsequent test is evidence of syphilitic infection.

(254) Diphtheria Bacillus Carriers.

W. L. MOSS, C. G. GUTHRIE AND J. GELLEN (*Johns Hopkins Hospital Bulletin*, April, 1921) present a report of conditions found in an orphan asylum. As a result of their investigations, they conclude that the carrier of aviru-

lent diphtheria bacilli is not a menace to the community. They consider that a positive throat culture, an elevation of temperature and a pathological throat condition without definite membrane formation are insufficient evidence on which to base a diagnosis of diphtheria with entire certainty. They state that virulence tests are necessary to avoid the infliction of needless hardships on carriers of avirulent diphtheria bacilli.

PÆDIATRICS.

(255) Blood Transfusion in Children.

B. ROBERTSON, ALAN BROWN AND R. SIMPSON (*North-West Medicine*, September, 1921) state that none can fail to recognize that the causative agent or agents of disease are transferred to their ultimate sphere of activity through the blood stream. Blood is a complex nutritive medium, containing, besides the elements of nutrition and stimulators of growth, protective antibodies and the little understood ætiological factors of disease. Death or recovery may occur through the complete or incomplete ascendancy of one of these over the other. Thus, it may be readily assumed that the tide may be favourably turned if the host is supplied with an extra amount of germ-combative agents or complement, i.e., by means of blood transfusion. From the analysis of 600 cases of blood transfusion in children for various ailments the authors come to the following conclusions: Some, but not all, of the blood groups are definitely established at birth. The groups, as indicated by the reactions of the red cells, may be established, although the agglutinins in the serum may not be established till later. This means that in all new-born infants, when transfusion is contemplated, the compatibilities of the blood should be tested. In 56% of the tests the father and in 57% the mother were in the same group as the child, while in 25% of the tests both father and mother were in the same group as the child. Mechanical reactions may be avoided by the use of a proper technique. Serious serological reactions may be averted by proper attention to the grouping in practically all cases. The syringe cannula method, taking everything into consideration, is the method of choice for transfusion in infants and children, the citrate method being reserved for selected cases. The internal saphenous vein at the ankle is the site of election for the injection. The maximum amount to be transfused in children up to the age of eighteen months should not exceed 15 c.cm. for each 0.45 kilogram of body weight and in older children the proportion decreases according to age. In exsanguination-transfusion great care must be exercised, as the limit of exsanguination depends on the condition of the patient. Roughly, however, the initial amount withdrawn will vary between 30 c.cm. and 100 c.cm. in infants before the transfusion can be commenced. After this the amount

depends on the weight of the patient and the amount of blood available for transfusion. The only cases which derive benefit from transfusion in nutritional disturbances, are those of severe marasmus with an associated secondary anaemia and those of acute intestinal intoxications. In the former group the mortality was reduced from 82% to 59%. In regard to blood diseases, the most striking results occurred in hæmorrhagic conditions, in which the mortality was only 2.3%, and in uncomplicated secondary anaemia. It is impossible to draw conclusions in purpura, hæmophilia, von Jaksch's anaemia and splenomegaly. It is of no benefit in leukæmia. In respiratory infections with an associated secondary anaemia transfusion is frequently beneficial and even in prolonged cases of broncho-pneumonia or lobar pneumonia with secondary anaemia it may bring about a more rapid resolution. Theoretically it is reasonable to believe that in children suffering from a bacteriæmia, the withdrawal of a certain amount of blood and the introduction of fresh adult blood should be of benefit. In erysipelas exsanguination-transfusion is without doubt an improved therapeutic measure. In the toxic shock of superficial burns, where convulsions have occurred as the result of the toxæmia, the mortality rate with any other form of treatment has been 100%. In this type of case the authors had eight cases with five recoveries (mortality 38%). Two of the patients succumbed to broncho-pneumonia after the burn toxæmia had been relieved.

(256) Cœliac Disease.

E. CAUTLEY (*Archives of Pediatrics*, March, 1921) concludes from a study of the literature and of his own cases that cœliac disease is due either to a failure of fat assimilation or to absorption of unknown causation or to the result of hepatic inadequacy, which causes a deficient secretion of bile, but no organic hepatic disease. Cœliac disease cannot be demonstrated after death and organic disease of the liver does not cause it. Bile plays a considerable part in the proper digestion of fat and the stools show that the chief failure lies in the absorption and assimilation of fat. Though the defective absorption may be ascribed to the lack of bile, the cause of this deficiency is still unknown and the administration of bile does not cure the patients. During treatment the diet must be reduced in quantity and altered in quantity. Fat must be limited in amount and sometimes entirely excluded. The fat of yolk of egg agrees well with some children, while others can take small quantities of butter, bacon fat or beef dripping. Cream should be avoided entirely. Carbo-hydrates agree best in the form of malted or partly malted preparations. Rusks, malted rusks and biscuits all crumble up easily and are more digestible than bread. Milk, sugar and honey are useful additions to the diet, if the starches are not well digested. Sometimes potatoes agree well and ground rice or semolina may

be taken. For protein food it is best to rely on good broths, pounded chicken or other white meat, fish and mutton or beef. Calves' foot and sweet jellies may also be given. The amount of food taken must be regulated carefully and the digestion of the foods given noted by observation of the stools. Bile salts and bile have been given to remedy the deficiency, but it is uncertain whether they are really beneficial. They should, however, be tried, usually in the form of glycocholate and taurocholate of soda, 0.06 gr. of each, prescribed with an alkali, syrup of orange and water; or ox-bile may be given in keratin-coated capsules. Bismuth and soda and aromatic chalk powder are useful for the looseness of the stools and sulphocarbolates, phenol or salol for the offensive smell, the salol being combined with small doses of castor oil and given several times a day. Salicylates, ammonium chloride, tincture of podophyllin and brandy may be useful as hepatic stimulants; small doses of grey powder are often beneficial.

(257) Prolapse of the Rectum.

LEONARD FINDLAY (*British Journal of Diseases of Children*, April-June, 1921) points out the unsatisfactory results hitherto obtained in the treatment of prolapse of the rectum in infants and children. He describes a simple method of treatment by the injection of alcohol into the submucous tissues on either side of the rectum. Over a period of nine months twenty-two children between the ages of five months and seven years were treated, with a cure in practically every case, though in several cases more than one injection was necessary. The prolapse had been present from some days up to several years and was either intermittent or persistent, but in all cases required manual reduction. The presence of diarrhoea is only another reason for immediate treatment, as the prolapse is probably the cause of the diarrhoea. The author considers that two factors are responsible for the cure by this method. Probably at the site of the injection there results a certain amount of irritation, with the formation of fibrous tissue and a probable fixing of the bowel wall to the tissues of the pelvic cavity. Subsequent examination at varying periods showed no evidence of induration or stenosis of the bowel. The second factor is the return of tone to the sphincter. In all cases of prolapse the tone of the sphincter is much impaired, amounting to a paresis in the intermittent cases and to a complete paralysis in those cases in which the bowel is constantly prolapsed. By reduction of the prolapse strain is removed from the muscle, which regains its tone in about ten days. The injection consists of 1.5 c.cm. of absolute alcohol injected by means of an ordinary exploring needle at a depth of 6 cm. to 7.5 cm. from the surface. The after-treatment consists of the daily application of a large pad for seven to ten days, the child being kept recumbent, with the buttocks firmly strapped together.

British Medical Association News.

MEDICO-POLITICAL.

A MEETING of the New South Wales Branch was held at the B.M.A. Building, 30-34, Elizabeth Street, Sydney, on December 2, 1921, Dr. FOURNESS BARRINGTON, the President, in the chair.

Remuneration of Ships' Surgeons.

Dr. R. H. TODD, the Honorary Secretary, moved on behalf of the Council:

That the remuneration of ships' surgeons should be at a rate not less than £25 a month, with the right to charge fees for attendance on passengers other than steerage passengers.

Dr. Todd briefly sketched the history of the action of the Federal Committee in regard to the remuneration of ships' surgeons (see THE MEDICAL JOURNAL OF AUSTRALIA, February 19, 1921, page 162, and July 30, 1921, page 90).

The motion was seconded by Dr. R. A. R. GREEN.

Dr. C. W. REID stated that he had made inquiries concerning the practice obtaining in various shipping companies. The Peninsular & Oriental Steam Navigation Company paid their surgeons at the rate of £25 per month and permitted them to charge 5s. to first-class passengers and 2s. 6d. to second class passengers per consultation. The Orient Steam Navigation Company, Limited, paid £25 10s. per month and allowed the surgeon to charge first- and second-class passengers fees of 7s. 6d. for the first and 5s. for the second attendance. On the immigrant ships the surgeons had heavy work to perform. Measles, scarlet fever and other zymotic diseases frequently broke out among the children, while confinements were plentiful. They were paid at the rate of £20 per month. He understood that on the ships sailing to the East belonging to Burns, Philp & Company, Limited, and to the Eastern and Australian Steamship Company, Limited, the ships' surgeons were paid £15 a month and the right to charge 5s. and 2s. 6d. for attendance on first- and second-class passengers respectively. The Royal Packet Navigation Company paid their surgeons £20 for the round trip to Java and Singapore. No fees were allowed. Surgeons on the Oceanic Steamship Company's ships received \$150 a month, but were not allowed to charge fees. They could, however, accept gratuities and were authorized to charge for attending patients suffering from venereal disease. In regard to the coastal steamers the *Katoomba* and the *Karoola* he understood that the surgeon was paid and was allowed to charge first-class passengers 5s. and second-class passengers 2s. 6d.. He held that ships' surgeons should be properly remunerated in order that the service rendered might be improved.

The motion was carried.

FORMATION OF A SPECIAL SECTION.

A MEETING was held in the B.M.A. Building, 30-34, Elizabeth Street, Sydney, on December 2, 1921, for the purpose of considering the proposal that a section of the New South Wales Branch of the British Medical Association to deal with preventive medicine should be formed. It was resolved that the sanction of the Council of the Branch be sought for the recognition of a section to be known as the Hygiene and Preventive Medicine Section. It was determined, subject to the approval of the Council, that a subscription of 2s. 6d. *per annum* be charged for membership of the section.

The following were appointed office-bearers and members of the Executive:

Chairman: Dr. W. G. ARMSTRONG.

Vice-Chairmen: Dr. C. E. CORLETTE, Dr. C. W. REID.

Honorary Secretary: Dr. C. J. WILEY.

Members of Committee: Dr. N. M. GIBSON, O.B.E., Dr. J. S. PURDY, D.S.O., Dr. F. M. SUCKLING and Dr. HARVEY SUTTON, O.B.E.

It was arranged, also subject to the approval of the Council, that the first meeting of the Section should be held in April, 1922, and that Dr. W. G. ARMSTRONG deliver an inaugural address on plague.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

JACOBS, WILLIAM VINCENT, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal North Shore Hospital, St. Leonards.

PETTINGER, CHARLES FIRTH, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal North Shore Hospital, St. Leonards.

FRANKLIN, SAMUEL DE VERE, M.B., Mast. Surg., 1921 (Univ. Sydney), Dixon Street, Parramatta.

THE undermentioned has been elected a member of the Western Australian Branch of the British Medical Association:

MOXON, HERBERT WILLIAM, M.R.C.S. (Eng.), L.R.C.P. (Lond.), 1906, Northampton.

THE WAR MEMORIAL FUND IN VICTORIA.

THE COUNCIL OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION announce that the sum required for the Memorial of the members of the medical profession in Victoria who gave their lives in the war, has been subscribed. The fund inaugurated by the Victorian Branch for this purpose has therefore been closed. The Council desire to express their gratitude to the several contributors to the fund.

It has been arranged with Mr. Web. Gilbert that the bronze War Memorial will be ready by February 1, 1923, and that the unveiling will take place during the sessions of the Australasian Medical Congress (British Medical Association) in Melbourne.

NOTICE TO MEMBERS.

IN our issue of November 5, 1921, we invited members of the Victorian and Queensland Branches to forward the wrappers of their copies of THE MEDICAL JOURNAL OF AUSTRALIA when undue delay in the delivery had taken place. A number of members acceded to our request. We were thus enabled to lodge a complaint with the postal authorities and have been informed that inquiries have been instituted into the cause of the delay and that the defect would be remedied. We take this opportunity of thanking those members who forwarded wrappers and of expressing a hope that the delivery is now improved.

FAREWELL TO DR. N. HAMILTON FAIRLEY.

A FAREWELL supper was tendered Dr. N. HAMILTON FAIRLEY, O.B.E., at the Mia Mia Café, Collins Street, Melbourne, on November 26, 1921. The function, which was of an extremely pleasant and cordial character, was organized by the Council of the Victorian Branch of the British Medical Association, in order to mark the appreciation of the medical profession in Victoria of Dr. Fairley's valuable research work and to extend to him the very best wishes of his colleagues on the eve of his departure for India.

Dr. Fairley is about to leave Australia to take up the duties of Professor of Clinical Medicine in the Research Institute of Bombay.

The chair was taken by the President of the Victorian Branch, Mr. BASIL KILVINGTON, who, after requesting the gathering to honour the loyal toast, intimated that he had received apologies for inability to attend from the Dean of the Faculty of Medicine, Sir HARRY ALLEN, Sir NEVILLE HOWSE, Drs. R. R. STAWELL, C. H. MOLLISON, STANLEY ARGYLE and S. W. PATTERSON and a number of others.

The health of the guest was proposed by Sir JAMES BARRETT, K.B.E., C.B., C.M.G.. Sir James expressed the very great pleasure he felt in proposing the toast. He outlined the brilliant career of Dr. Fairley, whose early work

in Melbourne on cerebro-spinal meningitis had been followed by an illuminating research into bilharziosis while he was attached to No. 14 Australian General Hospital in Egypt. While in England Dr. Fairley had obtained the diploma of the membership of the Royal College of Physicians of London and the Diploma of Tropical Medicine and Health of the University of Cambridge. On his return to Melbourne he had been appointed to the Walter and Eliza Hall Institute of Research as first assistant and in that capacity had carried out very valuable work relating to the complement fixation reaction in hydatid disease. More recently the Victorian Branch had had the privilege of hearing from Dr. Fairley a masterly exposition of the Wassermann reaction, the results of an exhaustive study designed to determine the best technique for the routine performance of the test; he had also put forward the conclusions he had reached in a detailed and highly scientific investigation of the question of familial syphilis.

Sir James Barrett referred to the distinction conferred on the Medical School of the Melbourne University by the elevation of one of its younger graduates to such a position as that about to be taken up by Dr. Fairley. In the course of further remarks he said that, although there was every reason to be proud of the attainments of the graduates of the medical school, yet there were some ideals still to be attained. He referred particularly to the disabilities under which the Medical School laboured in the field of research. Owing to the large number of students entering upon the medical course the professors and their staffs were overburdened by the work of teaching. Research work was seriously handicapped by the lack of research endowments. It was not enough that the medical school should turn out efficient graduates. He appealed to the medical profession to assist in whatever way lay in their power in the efforts to remedy the present state of affairs in which research work was very largely precluded by the conditions he had mentioned.

Dr. L. S. LATHAM supported the toast. He spoke from personal experience and contact with Dr. Fairley and his work at No. 14 Australian General Hospital in Egypt. Like others who were perhaps not contemporary with Dr. Fairley, but still able to feel a lot in common with him, he had been impressed with his enthusiasm, his intensity of purpose and his devotion to his work. These qualities had marked him out for signal success and it was inevitable that the field of tropical parasitology should attract a man of Dr. Fairley's special bent and ability.

Dr. N. HAMILTON FAIRLEY, in acknowledging the toast, said that he fully appreciated the compliment paid him in being entertained by the Victorian Branch of the British Medical Association. Standing as it did for the advance of medical science, unity of ethical procedure and for the maintenance of the highest ideals in medical practice, the Association represented the best thought and standards in the medical profession. It followed, therefore, that the position in which he found himself, could not be regarded otherwise than as one of great honour.

He wished to offer his thanks to the practising members of the profession for their cordial co-operation with the work of the Walter and Eliza Hall Institute during the last eighteen months. The assistance rendered by the profession combined with the generous policy of the Director of the Walter and Eliza Hall Institute, Dr. S. W. Patterson, to make his own work very congenial and pleasant.

Dr. Fairley added some remarks on research work in Australia. In a recent editorial in THE MEDICAL JOURNAL OF AUSTRALIA it had been maintained that, given adequate facilities, the Australian research worker was equal to any to be found in other countries. In his opinion, this claim was justified and its general truth was exemplified in the work of Mathison, Cleland, Dunhill, Elliott Smith and others.

At the same time, it was to be recognized that certain conditions in Australia, such as limited libraries, geographical isolation and economic disabilities, adversely affected research. In proportion to the wealth of the Commonwealth, research endowments were very limited.

After further interesting observations on the qualities of a research worker and the value and encouragement to him of the sustained interest of the medical profession, Dr. Fairley again expressed his thanks for the many indi-

cations of goodwill in those present towards himself. It was impossible to remain unmoved in the circumstances.

In conclusion, he felt bound to acknowledge also a debt of gratitude to C. J. Martin and Manson Barr; any success he had attained was due in no small measure to the stimulating influence of these men.

The toast of the Medical School, coupled with the names of PROFESSORS W. A. OSBORNE and R. J. A. BERRY, was proposed by Mr. B. T. ZWAR and supported by Dr. A. V. M. ANDERSON.

PROFESSOR OSBORNE was entertaining in reply. In the course of his remarks he said that he felt very keenly the lack of leisure and lack of funds which combined to curtail in a very serious degree the output of research work.

PROFESSOR BERRY expressed his thanks and by a reference of Dr. A. V. M. Anderson to the recent Stewart lectures in Psychology delivered by Professor Berry, was led to outline in an interesting manner his ideal of child study clinics.

Medical Societies.

BRISBANE GENERAL HOSPITAL CLINICAL SOCIETY.

A MEETING of the Brisbane General Hospital Clinical Society was held on June 9, 1921.

Syphilis of the Naso-Pharynx.

Dr. E. CULPIN showed a man who came to the Hospital complaining of swelling of the glands of the left anterior triangle of the neck. Dental caries was marked; after extraction the swelling of the glands commenced to subside. Further examination revealed wash leather patches and a deficiency on the left side of the soft palate. He admitted having had syphilis, followed by one year's treatment.

Dr. R. GRAHAM BROWN agreed with the diagnosis and remarked on the frequency of these cases. Very often they were overlooked. The three commonest conditions of the naso-pharynx were malignant disease, syphilis and Vincent's disease. Early diagnosis and treatment were most important.

Dr. E. S. MEYERS thought that the condition of the glands was due to septic infection. He also emphasized the importance of recognizing and treating specific infections early.

Main en Griffe.

Dr. E. S. MEYERS showed a case of commencing double *main en griffe*. There was wasting of the intrinsic muscles of the hand. No sensory disturbance nor reaction of degeneration was noted. The reflexes in the non-affected muscles were increased. The patient's serum did not yield a Wassermann reaction. The differential diagnosis lay between amyotrophic lateral sclerosis, syringomyelia, pachymeningitis of the cervical region, cervical rib and leprosy.

Dr. S. F. McDONALD thought that in many cases a reaction of degeneration was not obtained because contraction in the non-affected muscles masked that in the affected ones. He considered the case was one of amyotrophic lateral sclerosis.

Dr. J. AVERY, who had recently seen several cases of leprosy, discussed this aspect of the case. There was generally a mixture of the nodular and anæsthetic types. In the patient before them there was no thickening of the ulnar nerve and the typical *main en griffe* of leprosy was not present.

Dr. V. McDOWALL agreed with these remarks. There was blotching of the forearms, which resembled that in a case of leprosy which he had been treating with antimony.

Painful Spot Above the Internal Condyle of the Femur.

Dr. E. S. MEYERS showed a woman, aged 27 years, who complained of pain above the left internal condyle. There was a definitely tender area. He asked for help in the diagnosis.

Dr. C. E. TUCKER pointed out that there was a good deal of tenderness in the left iliac fossa and the pain might have been referred from some pelvic organ.

Further discussion was deferred to the next meeting.

Anthrax from a Shaving Brush.

DR. C. WEEDON read notes of a case and exhibited slides of bacilli grown from the malignant pustule. A shaving brush used by the patient also yielded a culture of the bacillus. The pustule had been excised. No specific antiserum had been obtained and the patient had died in three days.

DR. J. B. MACLEAN referred to the importance of the public health aspect of this case and to the fact that no serum was obtainable.

DR. E. S. MEYERS mentioned a case that he had seen treated with injections of pure carbolic acid with a successful result.

DR. WEEDON, in reply, said that most authorities recommended excision, except in positions where this was impossible. Injections of carbolic acid could then be given.

Tumour of Undescended Testicle.

DR. C. WEEDON read the notes of a case of a tumour of the hypogastrium, probably growing from an undescended testicle. It was of a malignant nature. It had been found impossible to remove it at the operation.

Cretinism or Achondroplasia.

DR. C. WEEDON showed a boy, aged 15 years, of stunted growth with short, spade-like hands and dislocation of the heads of both radii.

Discussion of this case was deferred until next meeting.

The diagnoses of cretinism and of achondroplasia were suggested.

Ununited Fracture of Radius.

DR. A. G. ANDERSON referred to a case of ununited fracture of the radius above the insertion of the *pronator radii teres* in a child. There was limitation of movement of supination. It was agreed that interference was not advisable and that in time the patient would improve considerably.

Skiagrams of Cranial Conditions.

DR. V. McDOWALL showed skiagrams of (i.) acromegaly, (ii.) pituitary tumour, (iii.) great enlargement of the accessory air sinuses. He pointed out that in the skiagrams of the acromegaly case no enlargement of the pituitary fossa was detected. Skiagrams of the enlarged hands were shown. The second skiagram revealed great enlargement of the pituitary fossa, but there were no symptoms of acromegaly. The third patient had proptosis as a marked sign.

DR. R. GRAHAM BROWN stated that the similarity in the X-ray appearances in the case of acromegaly and that of enlarged air sinuses with proptosis was very striking. Regarding the case of enlarged pituitary fossa, the patient had lost his headache since a course of mercury and iodide, despite the fact that his serum did not react to the Wassermann test.

Public Health.

THE INTERNATIONAL HEALTH BOARD.

THE seventh annual report of the International Health Board of the Rockefeller Foundation for the year 1920 has just reached us. This publication is one of the most important of the yearly reports issued in any part of the world. It gives information of the vast and ever-extending voluntary activity of an unofficial agency, acting in close and harmonious cooperation with governments. It demonstrates the power of wealth, expended by experts without bias, political influence and red tape administration. It is an indication to the wealthy concerning the most profitable way of using money for the benefit of mankind. It records the result of the application of exact technical knowledge to the important problems of communal life when popular assistance is obtained, not by any legislative compulsion, but by means of an intelligent interest in the work and the awakening of a hygienic conscience. In 1920 the International Health Board spent over £330,000 on the various integral parts of its campaign to prevent disease. Even of greater importance is the fact that this

large expenditure compelled the governments of over fifty states and countries to contribute similar sums of money to the programmes of the Board.

On the first pages of the report are to be found a map of the world indicating the scenes of activity of the International Health Board, the names of the officers and members of the Board and lists of the members of the several staffs. Three members of the Board are no longer alive. On July 4, 1920, Major-General William Crawford Gorgas, one of the greatest hygienists of modern times, died while on his way to the west coast of Africa to investigate the prevalence and epidemiology of yellow fever in that region. The loss of the world of this pioneer worker is immeasurable. Of the members of the administrative staff of the Board, Dr. Victor G. Heiser is, perhaps, the best known on this side of the Pacific Ocean. He is the Director for the East and consequently Australia is included in the sphere of his activity. Drs. Ferrell, Howard, Hackett, Ernst C. Meyer and F. F. Russell are the other members holding directorships, under the General Director, Mr. Wickliffe Rose. There are over one hundred members of the field staff. For Australia two experts, Dr. W. A. Sawyer and Dr. S. M. Lambert, are working in the Hookworm Campaign.

The map referred to above is amplified by a summary, occupying some forty-eight pages of print, entitled "Operations in Brief." A few of the achievements of the year 1920 may be singled out for special mention.

Yellow Fever Control.

Yellow fever is a disease which presents a grave danger, not only to the countries where it is endemic and epidemic, but also to all countries within a week's sea journey of these infected areas, especially those in which the *Stegomyia fasciata* abounds. Thanks to Gorgas, Walter Reed and the small army of expert workers, including Rupert Boyce, yellow fever has been conquered in Havana and Panama. It still flourishes in Brazil, Ecuador, Peru, Guatemala, Honduras, Nicaragua, Salvador, Mexico, West Africa, East Africa and the Sandwich Islands. A glance at a map of North, Central and South America showing the prevalence of yellow fever in 1900 and at the same map showing the state of affairs in 1920 reveals the extraordinary victory over this dangerous and insidious disease. Cuba, Jamaica and the islands extending southward to the coast of Venezuela, nearly the whole of the northern part of South America, as well as Central America, no longer need the distinctive markings of endemic or epidemic areas. The Board set to work to clean up the remaining infection. In Brazil the work had been commenced a considerable time ago. The International Health Board, collaborating with the Brazilian National Department of Health, concentrated an attack on Pernambuco and Bahia, two centres from which the infection is held to have been spreading. Some sporadic outbreaks were extinguished early in the year. The breeding ground of the *Stegomyia fasciata* is being annihilated.

In Ecuador the infection up to a few years ago was regarded as the most dreaded in the world. In 1913 a campaign was begun. This campaign against the mosquito proved eminently successful, so that early in 1919 only an occasional specimen was encountered. The last case of yellow fever reported from Ecuador and Guayaquil was in the early period of 1919. The mosquito control was continued for a further year and at the end of 1920 the Board withdrew from the campaign, since the area has been declared free of infection.

A severe and somewhat extensive epidemic of yellow fever was reported in the department of Piura in the northern district of Peru. More than 3,000 persons were attacked and between 500 and 600 died. The Government of Peru started a mosquito campaign, with the assistance of Dr. Henry R. Carter, an erstwhile co-worker with Gorgas. The epidemic was quickly stemmed. Dr. Noguchi visited the district at the instigation of the Rockefeller Foundation in 1920 and conducted some important research work in connexion with the isolation of the *Leptospira icteroides* from the blood of persons suffering from yellow fever. The disease apparently spread to the south unnoticed and was still active when the report was written. The Board was lending assistance to the campaign to deal with this spread.

In Mexico and Central America an elaborate plan of attack has been devised to combat the endemic and epidemic spread of yellow fever. The principal focus is situated at Merida. The Governments of Mexico, of Guatemala, of Honduras, of Nicaragua and of Salvador have combined to form a yellow fever commission to which the Board has been asked to appoint representatives. The result of the coordinated effort has been a satisfactory reduction in the number of *Stegomyia fasciata* and in the number of infections in man.

A commission from the International Health Board was sent in June, 1920, to West Africa for the purpose of ascertaining whether yellow fever was actually endemic as alleged in the Belgian Congo, Dahomey, the Gold Coast, Northern Nigeria, Senegal, Sierra Leone and Southern Nigeria and, in the event of the prevalence being confirmed, to determine what measures of control were feasible. The commission submitted a report in December. No undoubted case of yellow fever has been observed. On the other hand, the commissioners have reason to believe that the infection has been present within recent years. The district said to be infected is very vast and the means of transport are primitive. They suggest that a second commission should be equipped more adequately to meet the difficulties encountered. Prolonged investigation is needed to determine the actual state of affairs.

The results of Noguchi's researches are of importance. He has established the fact that yellow fever is caused by *Leptospira icteroides*. Killed cultures have been employed for protective inoculation with seemingly good results. More recently a therapeutic serum has been prepared. It is stated that the mortality of the disease has been reduced by the use of this serum from 50% or 60% to 9%. The warning is given that the introduction of the vaccine and serum must not be regarded as replacing the plan of thorough mosquito control in the prophylaxis of yellow fever.

Tuberculosis.

In 1917 a national crusade against tuberculosis was initiated in France. The mortality from the disease was said to be high and to be increasing as the result of the hardships of war. There existed in the whole of France only twenty-two tuberculosis dispensaries and not more than 8,000 beds for consumptives. In view of the seriousness of the situation a commission for the prevention of tuberculosis was established in France. The Board undertook the establishment of the necessary measures with the cooperation of the French. The idea was to set up dispensaries, to develop centres for the training of visiting nurses, to provide post-graduate training for medical practitioners for the anti-tuberculosis campaign, to conduct an energetic educational campaign and to focus all activities in two model demonstrations, one in a congested area in Paris and the other in a rural district. The Board workers have set themselves the task of equipping their French colleagues, so that by the end of 1922 the assistance of the International Health Board will no longer be needed. In 1920 the number of dispensaries was increased to 127, while good progress was made in the educational campaign.

Malaria Prevention.

In the southern States of America experimental field work has been conducted on a small scale with a view to the demonstration of the value of mosquito destruction as an economic measure. It has been shown that in a town in Tennessee eighty-seven families were attacked by malarial fever. The financial loss, representing the charges for medical attendance and for medicine and the loss of wages, amounted to \$3,358 in 1919. In the year 1920 \$1,847 was expended on mosquito destruction. The loss due to malaria was reduced to \$165, sixteen infections having occurred. This represents a clear gain of \$1,346, or 40% of the original loss. Early in the year the Public Health Service of the United States, the health departments of the several States and the International Health Board entered into an arrangement by which demonstrations in malaria control might be carried out in fifty-two towns in ten of the southern States. The local communities provided the main part of the money necessary to the demonstrations. The measures employed included simple drainage, the filling in of pits and shallow pools, the channelling of streams, the clearing of the margins of streams and

pools, the removal of obstructions, the oiling of streams and the enlistment of the services of the top minnow. The average cost of carrying these measures into effect worked out at 78 cents (about 3s. 3d.) per person. The expenditure of this small sum resulted in a very large reduction in the number of calls on the doctor on account of malaria. It is stated that communities having a "reasonably heavy infection may free themselves of malaria and of the mosquito as a pest for less than malaria is costing in doctors' bills alone."

A special chapter is devoted to the use of the top minnow (*Gambusia affinis*) as a means of destroying mosquitoes. It was found that the fish devoured mosquito larvae and eggs and this kept the pest under full control. Another experiment has been carried out in the prophylaxis of malaria. In a district harbouring 9,000 inhabitants, a complete system of visitation was undertaken. Blood examination was done of all persons. All persons who were found to be infected or whose history gave information of an attack within twelve months, were given the standard treatment of quinine, the dose being 0.6 gramme (ten grains) daily for eight weeks. It was found that all parasites were killed in about 90% of the infected. The incidence of malaria was reduced from 40% to about 13% in this way at a cost of just over one dollar per person in 1918, the same in 1919 and 38 cents in 1920. Quinine is distributed free of cost. Arrangements are being made by the State and local authorities for the sale of quinine in all malarious districts in the southern States at the ordinary stores at about half the usual price.

Hookworm Eradication.

The reason of the selection of hookworm for the main activity of the International Health Board has been explained on more than one occasion in these columns. The Board has a definite objective in view, while reduction of the most devastating cause of anaemia and the other effects of an energetically conducted campaign against hookworm infestation are regarded as secondary and subsidiary. The cause, mode of transmission, means of prevention and method of cure can be demonstrated to the most unintelligent and the demonstration is the best method of introducing a general improvement in the health conditions of the community. The International Health Board has induced the governments of many countries and states to join in a properly planned campaign aiming at the eradication of ancylostomiasis. The Board undertakes through the agency of its experts to set the ball rolling. The control of the campaign is undertaken for a few years, until the workers in the several countries have become expert and can continue the good work unaided. The eradication of hookworm infestation from a community is a tedious and long process. The Board holds that it would be improper for an outside commission to undertake to carry it out to its conclusion. After all, each country has its own responsibilities. The International Health Board offers its services to initiate a plan of preventive medicine, not to relieve the local authorities of their responsibilities in the direction of safeguarding the health of their people. The work initiated by the Board with the collaboration of the local agencies must be continued after the Board has withdrawn for a very long time, perhaps for all time. Ancylostomiasis is not only a disabling disease; it is also an index of the sanitary condition of a community. After the lesson taught in the hookworm campaigns has been taught and properly acquired by the people and by the local authority, hookworm infestation, enteric fever and many other intestinal infections should disappear. The incidence of these infections is the measure of the thoroughness with which the local authority and the people carry out their duties.

In the American States in the south ancylostomiasis has been attacked since the foundation of the Board. Between 1911 and 1914 9,012 school children were examined in twelve counties. The infection rate was 59.7%. Between 1914 and 1918 25,650 children were examined and it was found that 38.7% were infected. In 1920 a control survey was carried out and it was found that 21.7% of 4,178 children were infected. In other words, the infection rate had been reduced by 63.6%.

During the war period the hookworm measures in the West Indies were discontinued on account of the shortage

of expert workers. The governments in Trinidad, St. Lucia, Jamaica, Porto Rico, Dutch Guiana, British Guiana and Grenada have undertaken to establish and maintain a system of soil sanitation in advance of the mobile clinics of the International Health Board, so that the organized scheme of education and treatment may be introduced under favourable conditions. Under the influence of the Board's activity, the local authorities seem to be awakening to their responsibilities in regard to measures of preventive medicine and hygiene.

The campaign in Brazil has advanced to an interesting stage. In 1916 a survey was undertaken by the Board, followed by a demonstration in the State of Rio. Governmental support was given freely and in increasing measure and as a result the officials and people bore their share in the campaign. Within four years the influence of the work has reached the entire population of the infected areas. Federal and State departments of health, with enlarged powers and increased resources, have united in a national scheme of rural sanitation in which hookworm and malaria are given the first place. It is recognized that the time has arrived for the withdrawal of the assistance by the Board to this form of work and for the utilization of the monetary and trained assistance of the staff in other directions. It is proposed to introduce the trained visiting nurse, to develop county organization as an integral part of the state system and to institute a school for the proper training of the personnel needed to meet the requirements of the expanded activities of the local authorities in preventive medicine.

The record for the year in Central America and in Colombia reveals an abundance of well directed energy and admirable organization. It has been found that in Colombia about 75% of the population of 4,350,000 are infected with hookworm and that more than 300,000 have been rendered non-productive by this disease. The Government, officials, planters and the enlightened members of the community have already extended their support. A scheme of soil sanitation has been introduced in advance of the survey and treatment by the experts of the Board. The Board has further provided fellowships in public health for a limited number of promising young Colombian practitioners.

Lieutenant-Colonel Clayton Lane, of the Indian Medical Service, started in 1916 a systematic crusade in the tea estates of Assam and prepared the way for more extensive operations. The Board was invited to send a representative in 1920 to direct operations in the Madras Presidency and at the present time plans are being completed for a similar movement in Bengal. The work is being prosecuted in the island of Mauritius, in Siam and in Ceylon.

It is unnecessary in this journal to follow the report in connexion with the work conducted in Australia. Reference is made to the establishment of the Department of Health of the Commonwealth and of the extended activities of the new department. The survey and active campaign now extends to all States, to Papua and to late German New Guinea. The Australian Hookworm Campaign is under the direction of Dr. W. A. Sawyer, to whom the people of the Commonwealth are under a debt of gratitude for a splendid piece of organization and for most valuable work. The Commonwealth is committed to a programme of modern prophylaxis. The young Australians who have been appointed on the staff as field medical officers, are rapidly acquiring experience and knowledge and on their shoulders will fall the onus of continuing the work when the International Health Board retires from the scene. The Board is extending its assistance by lending the services of Dr. A. Lanza, an expert industrial hygienist, and of a sanitary engineer and is helping to mature plans for a public health laboratory service. A few fellowships will also be offered to promising young Australian graduates.

Field Studies.

It is stated that the Board has not entered the field of research as such. It has passed very close to it. The work of Dr. Noguchi, that of Drs. Darling and Smillie on hookworm, that of Dr. Bass on malaria and that of Dr. M. E. Connor on yellow fever may be mentioned as evidence of sound scientific research. To the report are attached some appendices summarizing the knowledge collected by the workers of the International Health Board and by

others on hookworm, yellow fever and other matters. The material on which the appendices has been based, has been published elsewhere. It is impossible to enter into details at present in these columns. The reports of the members of the field staffs and their publications in the medical journals are extremely valuable contributions to the science of preventive medicine. Reference has recently been made in THE MEDICAL JOURNAL OF AUSTRALIA to the report by Dr. S. M. Lambert on his hookworm survey in Papua and New Guinea, which everyone interested in the prophylaxis of this disease and in the fate of the Polynesian native should secure and read with care.

The Rockefeller Foundation may be congratulated on the great value of the achievements of its Health Board during the year 1920.

THE PLAGUE OUTBREAK.

THE FEDERAL DEPARTMENT OF HEALTH has issued on November 29, 1921, and December 2, 1921, Nos. 19 and 20 of the Plague Bulletin.

General.

The following facts are published to illustrate the persistence of plague infection among fleas. On September 27, 1921, four infected rats (*Mus rattus*) were caught at the Military Remount Depot at Enoggera. Measures were adopted to destroy rats and the infected premises were treated with kerosene and cresol. The buildings were said to be too large and too open for fumigation. Two sentinel guinea-pigs were placed in the fodder shed on October 7. Both were proved to be infected four days later. On October 17 two further guinea-pigs were introduced and both acquired plague. The second of these guinea-pigs died on October 28, 1921. No infected rats were caught at the Depot during this period. It thus appeared that the infection was conveyed between September 27 and October 17 through fleas.

The Queensland Health Department has been approached in connexion with the tearing of wheat bags by bag hooks and the spilling of wheat on the wharves, thus affording food for rats. The assistance of the Wheat Board of Queensland is being sought to provide suitable bags in the place of the worn and faulty bags in common use.

Plague in Man.

During the week ended November 26, 1921, three cases occurred in male patients in Brisbane. All three patients died. Two other patients died who had been admitted to hospital during the previous week. On November 28 a woman, aged 65 years, was admitted to the Wattlebrae Isolation Hospital suffering from plague. She died on the same day. On the same day a woman, aged 44 years, was admitted to the hospital suffering from pneumonic plague and died on the same day. A third patient, aged 13 years, was also admitted on November 28.

One case of plague in man was notified during the week at Townsville. The total number of cases up to the end of the week under review in Townsville was 26 and the total number of deaths 17.

During the week there was one fresh case in Cairns, bringing the total number up to 15. No further infections were reported in Rockhampton, Port Douglas, Cooktown, Innisfail or Mackay.

On November 28, 1921, a patient was admitted to the Coast Hospital, Sydney, and was isolated for observation. This man had been working in a produce store in Sussex Street, adjoining premises on which infected rats had been discovered. The diagnosis of plague was confirmed on December 1, 1921.

It is recorded that the steward on board the *Levuka*, who was removed to hospital on November 18, 1921, on account of suspected plague, was carefully observed until November 23. The bacteriological examination of the puncture fluid from the glands failed to disclose plague bacilli.

Plague in Rodents.

During the week ended November 26, 1921, 1,347 rats and mice were examined in Brisbane and five were found to be infected. In addition, 52 rodents caught on vessels in the port of Brisbane were examined. None of these was

infected. On November 28, 29 and 30 620 rats and mice were examined, among which were two infected rats.

A large number of rats was caught in Townsville and smears from the spleens of these animals were examined by Dr. Breinl. No infection was discovered. In Cairns two infected rats were found. It is stated that eighteen fleas were recovered from rats and sent to the Cairns Laboratory and were identified as *Xenopsylla cheopis*. Two infected rats were caught in Rockhampton and one was caught in Port Douglas.

In Sydney, both the State Health Department and the City Council have continued to destroy rats in the infected area and to submit them to examination. No further infection was discovered between November 19 and December 1.

The rats found on board the *Cufic* on November 18, 1921, at Adelaide were examined on account of suspicious symptoms. No plague bacilli were found.

Naval and Military.

APPOINTMENTS.

The following announcements appeared in the *Commonwealth of Australia Gazette*, No. 92, of December 1, 1921:

Australian Military Forces.

NEW ORGANIZATION.

The Governor-General in Council has approved of the following changes being made in connexion with the Australian Military Forces:

THIRD MILITARY DISTRICT.

Army Medical Corps.

Australian Army Medical Corps.—CAPTAIN W. A. LUKE is appointed from the Reserve of Officers, with corps seniority next after CAPTAIN (provisionally) H. I. ROBINSON, 6th October, 1921.

OLD ORGANIZATION.

The Governor-General in Council has approved of the following changes being made in connexion with the Australian Military Forces:

FIRST MILITARY DISTRICT.

Australian Army Medical Corps Reserve.—HONORARY CAPTAIN A. J. TURNER is retired under the provisions of Australian Military Regulation 153 (h), 3rd October, 1921.

THIRD MILITARY DISTRICT.

Reserve of Officers.—MAJOR F. T. BEAMISH, O.B.E., is transferred to the Reserve of Officers, Fifth Military District, 1st November, 1921.

FOURTH MILITARY DISTRICT.

Reserve of Officers.—HONORARY CAPTAIN J. BOOTH is placed on the Retired List, Third Military District, with the rank of Major, and with permission to wear the prescribed uniform, 1st November, 1921. The undermentioned officers are retired under the provisions of Australian Military Regulation 152 (i), 1st November, 1921: HONORARY MAJOR R. H. MARTEN, HONORARY CAPTAIN W. B. AITKEN.

FIFTH MILITARY DISTRICT.

Australian Army Medical Corps.—MAJOR R. C. E. ATKINSON is transferred to the Reserve of Officers, 1st September, 1921.

Reserve of Officers.—MAJOR F. T. BEAMISH, O.B.E., is transferred from the Reserve of Officers, Third Military District, 1st November, 1921.

THE AUSTRALASIAN MEDICAL CONGRESS, BRISBANE, 1920.

THE EXECUTIVE COMMITTEE OF THE AUSTRALASIAN MEDICAL CONGRESS, ELEVENTH SESSION, BRISBANE, 1920, announce that the *Proceedings of Congress* are now in the press and will be ready for distribution about the end of the year.

Correspondence.

THE DEATH OF PRINCESS CHARLOTTE OF WALES.

SIR: In your issue of November 19 (on page 463) there is an allusion to the death of this Princess. "It was stated," the writer says, "that the cause of death was premature placental separation."

There is another account given of the confinement by Dr. Sims, which was published by Dr. W. S. Playfair some fifty years ago in the *Medical Times and Gazette* (vide Playfair's "Midwifery," Volume II.). Dr. Playfair makes out a strong case for pulmonary thrombosis.

Yours, etc.,

ALFRED LONDON,

Lecturer on Obstetrics, University of Adelaide.
North Terrace, Adelaide (undated).

THE COST OF MEDICINES.

SIR: I would be obliged by your allowing me space to call attention to a glaring example of profiteering on the part of some of our leading metropolitan chemists.

A short time ago I prescribed horse serum for a patient and, as I knew she could not well afford to pay more than a reasonable price for it, I informed her that the Commonwealth Laboratories charged 1s. 3d. per tube.

I advised her not to get the prescription dispensed if she thought the price asked in any way unreasonable, but to let me know how she fared.

A few days later my patient returned and told me that she had been to three separate chemists, two in Hunter Street and one in one of the northern suburbs.

All had asked her the same price, viz., 3s. 6d. per tube! I then rang up the person in charge at the Commonwealth Laboratories Distributing Depot at the Customs House, Circular Quay, and reported the matter to him.

He then told me that the Commonwealth Laboratories retailed the tubes at 1s. 3d. each and that in future he would be glad to supply any patient of mine at that price, provided they had a prescription for the product required.

I need hardly say that I have since directed all my patients to go to the Customs House direct.

Yours, etc.,

SYDNEY JAMIESON.

"Craignish," 185 Macquarie Street, Sydney,
November 28, 1921.

Medical Matters in Parliament.

THE HOSPITALS BILL IN WESTERN AUSTRALIA.

ON September 14, 1921, the Colonial Secretary introduced a Hospitals Bill into the Legislative Assembly of Western Australia for the purpose of insuring "that the provision of public hospitals shall be the concern of the various local governing bodies throughout the State, as well as of the Government." The Bill was read for the first time. It was introduced for the second reading on October 27 and after a short debate was read a second time on November 15 and referred to a select committee.

In view of the drastic nature of the changes provided by this measure special action has been taken by the Western Australian Branch of the British Medical Association to deal with its provisions. We propose to deal with the Bill in an early issue.

Births, Marriages and Deaths.

THE charge for inserting advertisements of Births, Marriages and Deaths is 5s., which sum should be forwarded in money orders or stamps with the notice, not later than the first post on Tuesday, in order to insure insertion in the current issue.

BIRTH.

STOREY.—On December 2, 1921, at "Sherbrooke," Randwick, the wife of Dr. JOHN COLVIN STOREY—a daughter (Joan Evelyn).

Books Received.

- CLINICAL SURGICAL DIAGNOSIS FOR STUDENTS AND PRACTITIONERS, by F. de Quervain, Professor of Surgery at the University of Berne; Third English Edition, Translated from the Seventh Edition by J. Snowman, M.D.; 1921. London: John Bale, Sons & Danielsson, Limited; Royal 8vo., pp. 914, with 731 illustrations and seven plates. Price: 50s. net.
- A TEXT-BOOK OF PHARMACOGNOSY, by Heber W. Youngken, Ph.M., Ph.D.; 1921. Philadelphia: P. Blakiston's Son & Company; Royal 8vo., pp. 538, with 210 figures containing 350 illustrations. Price: \$6.00 net.

Medical Appointments.

DR. S. ROBINSON (B.M.A.) has been appointed Government Medical Officer at Kendall, New South Wales.

DR. G. E. RENNIE (B.M.A.) has been appointed Honorary Physician, Coast Hospital, Little Bay, New South Wales.

DR. R. DICK (B.M.A.) has been appointed Acting Senior Medical Officer of Health, Hunter River District, New South Wales.

DR. K. F. VICKERY (B.M.A.) has been appointed Acting Medical Officer of Health, Hunter River District, New South Wales.

DR. R. W. TELFORD has been appointed Deputy Commissioner of Public Health by the Government of Queensland.

DR. A. R. SOUTHWOOD (B.M.A.) has been appointed Honorary Assistant Physician, Infectious Diseases Block, Adelaide Hospital.

DR. G. H. BURNELL (B.M.A.) has been appointed Medical Officer, Night Clinic Department, Adelaide Hospital.

DR. A. M. MORGAN (B.M.A.) has been appointed an Examiner under the provisions of the *Opticians Act, 1920*, South Australia.

DR. R. K. BIRNIE (B.M.A.) AND DR. W. R. TREMBATH (B.M.A.) have been appointed Members of the Council of the Daylesford Technical School, Victoria.

THE surgeries of the undermentioned medical practitioners have been appointed places for public vaccination by the Commission of Public Health in Victoria: DR. J. N. BROWN (B.M.A.), at Violet Town; DR. J. KIRKPATRICK (B.M.A.), at Minyip; DR. S. R. HECKER (B.M.A.), at Murrayville and rooms at Cowangie; DR. N. R. PRICHARD (B.M.A.), at Euroa.

DR. H. W. WARD (B.M.A.) has been appointed a Justice of the Peace for the York Magisterial District, Western Australia.

DR. H. H. JOHNSTON (B.M.A.) has been appointed Honorary Surgeon for Diseases of the Ear, Nose and Throat at the Psychiatric Clinic, Broughton Hall and the Mental Hospital, Callan Park, New South Wales.

Medical Appointments Vacant, etc..

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii..

THE MEDICAL JOURNAL OF AUSTRALIA: Assistant Editor.
PUBLIC SERVICE COMMISSIONER'S DEPARTMENT, QUEENSLAND:
Medical Officer for Venereal Clinics and Venereal Isolation Hospital, South Brisbane.
WALTER AND ELIZA HALL INSTITUTE OF RESEARCH IN PATHOLOGY AND MEDICINE, MELBOURNE: Temporary Qualified Assistant.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmmain United Friendly Societies' Dispensary Friendly Society Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phoenix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B. M. A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 3, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, 6, Bank of New South Wales Chambers, St. George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

- DEC. 13.—Tasmanian Branch, B.M.A.: Meeting.
DEC. 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
DEC. 14.—Melbourne Paediatric Society (Victoria).
DEC. 15.—Victorian Branch, B.M.A.: Council.
DEC. 20.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
DEC. 23.—Queensland Branch, B.M.A.: Council.
JAN. 3.—New South Wales Branch, B.M.A.: Council (Quarterly).
JAN. 10.—New South Wales Branch, B.M.A.: Ethics Committee.
JAN. 12.—Victorian Branch, B.M.A.: Council.
JAN. 13.—Queensland Branch, B.M.A.: Council.
JAN. 13.—South Australian Branch, B.M.A.: Council.
JAN. 17.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JAN. 24.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
JAN. 25.—Victorian Branch, B.M.A.: Council.
JAN. 27.—Queensland Branch, B.M.A.: Council.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)